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Paper TRADE JOURNAL

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VOLUME 126, No. 3 JANUARY 15, 1948

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DOWNINGTOWN

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Paper Making Machinery

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CALENDAR OF COMING EVENTS

January 28-30—Technical Section, Canadian Pulp and Paper Association, Annual Meeting, Mount Royal Hotel, Montreal, P. Q.

February 23-26, 1948—Technical Association of the Pulp and Paper Industry, Annual Meeting, Hotel Commodore, New York City.

May 18-20, 1948—American Pulp and Paper Mill Superintendents Association, Annual Meeting, Roosevelt Hotel, New Orleans, La.

June 11-12, 1948—Paper & Twine Association, Annual Convention, French Lick Springs, Indiana.

CENTENNIAL SPOTLIGHT
1848-1948

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(NEWS ITEM: *Paper tissues impregnated with soap are a recent development for today's travellers.*)

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Paper to polish silver . . . paper bags to package ice . . . paper cords for washday . . . new uses for paper calling for new standards of lightness and toughness, new standards of quality in performance. New responsibilities —new opportunities for the Pulp and Paper Industry.

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Paper TRADE JOURNAL

VOL. 126, NO. 3 REG. U.S. PAT. OFF. JANUARY 15, 1948

Sees Waste Shortage In Marshall Plan

CHICAGO—A. F. Meisterheim, local mill buyer of paper stock, is an important contributor to year end statements concerning the future of the waste paper market. He is quoted this week as stating that waste paper markets, well stabilized through 1947, will remain on a firm basis most of 1948, with occasional slight variations. He has said that midwest paper mills ended the year with "comfortable inventories" and with a good balance between demand and supply and that he expects the paper industry to absorb all the waste paper offered.

The veteran Chicago waste paper trade leader threw in an interesting observation on the Marshall Plan which, he said, should mean a demand for packing cases for packaging food and equipment to be sent to Europe, and that such shipments would mean a loss of any re-conversion because the materials shipped overseas would not return to America, thus increasing the shortages for old corrugated in this country.

Mr. Meisterheim indicated that the public still held to the habit of collecting waste paper and of indulging in "waste paper drives" as an outgrowth of the war years and stated that this habit would be helpful for the future. The value of such voluntary programs was pointed out through figures which show that before the war about 30 percent of the paper made returned to the mills as scrap, while during the war and now this return has increased to 40 per cent.

In addition to shortages in the old corrugated market, Mr. Meisterheim also pointed out to the trade that any increases in the building boom would heavily drain the mixed paper markets where all such waste products go into the manufacture of roofing paper.

Railroads Find Fewer Deficient Containers

NEW YORK—A. H. Greenly, Chairman of the Official Classification Committee, expressed satisfaction with the progress being made by the corrugated fibre box industry in correcting some of the deficiencies in materials and methods which have plagued the industry since the war. Mr. Greenly was particularly pleased with the efforts of the Quality Control and Research Group of Manufacturers sponsored by Container Laboratories, Inc. whom he addressed last week at a meeting at the Waldorf-Astoria hotel.

The railroads have been systematically sampling fibre shipping containers to assure compliance with Rule 41, according to Mr. Greenly, and in 1946 and 1947 deficient containers were appearing in approximately 33 per cent of the cases investigated. The average for 1947 has dropped to 27½ per cent, and continuing progress is apparent.

Everest Is Named to Small Business Unit

CHICAGO—D. C. Everest, president of the Marathon Corporation, has been appointed a member of the small business advisory committee to the U. S. Treasury Department.

Close cooperation between the federal government and small business, according to the Conference of American Small Business Organizations, has been established for the first time by the appointment of advisory committees to the treasury, justice, commerce, agriculture and postoffce departments under the provisions of Senate Concurrent Resolution 14 passed by congress last July.

The resolution was sponsored by the conference of small business organizations, which has had this as its goal

(Continued on page 30)

D. C. EVEREST

McCabe Plan Calls Halt on Inflation

CHESTER, Pa.—Thomas B. McCabe, president of Scott Paper Company, and chairman of board, Federal Reserve Bank of Philadelphia, in a plan to check inflation, has issued the following statement:

"As everyone knows, the nation's economic machine is at present traveling at greater speed than at any time in peace-time history. The gross national product, employment, prices, wages, profits and consumer spending are all continuing upward. Record-breaking performances have followed one upon another through the post-war period.

"Figuratively speaking, we have stepped up the speed of our country's car from a pre-war 40 miles per hour to 50, then 60, and now 75, with all speed warnings unheeded. It is a thrilling ride, but the passengers are beginning to complain of inflationary dizziness and to express concern about the old car's ability to negotiate the sharp curves ahead.

"Our apprehensions have resulted in much talk about easing up on the accelerator and applying the brakes, but there is as yet no common agreement as to concerted action on fundamental causes. We dislike the sobering prospect of a slow-down, for we haven't forgotten the 1930's. This feeling is accentuated as we approach the presidential election. Neither of our great parties wants to take the onus of slowing down the economic machine or to incur the ill will of strong pressure groups who are now profiting from inflation.

"Everyone seems to recognize that inflation is an insidious force—a force that upsets our economic stability and thwarts our foreign policy, yet there is a general disposition on the part of each group to 'blame the other fellow' and urge restrictive measures on all others except themselves.

"Thus government blames industry, industry blames government, labor blames both, and each individual member of the public blames everyone but himself.

"Many of the proposed corrective measures are only devices to curb the other fellow's excesses. It is high time to call a halt to such superficial treatment and to develop a broad, constructive program for curbing all of our excesses. This program should be di-

(Continued on page 38)

Erickson Is Named Fernandina Manager

FERNANDINA, Fla.—Russell F. Erickson has been appointed resident manager of the company's mill at Fernandina. Mr. Erickson became associated with the company early in 1946 as plant engineer, and in August, 1947, was appointed assistant resident manager. He succeeds James T. Sheehy who has been transferred to the Northwest to act in a liaison capacity between various divisions in the Northwest and the executive offices in New York.

Following his graduation from the University of Minnesota in 1932, with a degree in Mechanical Engineering, Mr. Erickson joined the Minnesota and Ontario Paper Company at International Falls, Minn., later becoming the company's design and maintenance engineer.

Early in 1937, he became associated with George F. Hardy & Son, consulting engineers in New York, and continued his studies through courses in civil engineering at Columbia University and at Pratt Institute in Brooklyn.

In 1939, Mr. Erickson joined Hollingsworth and Whitney, paper manufacturers, in the company's executive offices in Boston, and later became plant engineer at their new mill in Mobile, Ala., where he continued until he joined Rayonier Incorporated.

Jack Alden Returns To Paper Cup Field

PHILADELPHIA—John C. Alden, who has spent some twenty years in the paper cup field, has returned to that branch of the industry. He has been made general sales manager for the Paper Container Manufacturing Company in Chicago. In taking up his new work he has resigned as sales manager of the Paramount Paper Products Company, Inc., and the Enterprise Paper Company, both of this city, carrying with him the warm best wishes of Theodore Isen, general manager of the former company, and of Harold Isen of the latter.

Alton Butts Ends Service With Mutual Box Board

UTICA, N. Y.—Alton G. Butts, for many years associated with Mutual Box Board Company, terminated his service with them as sales manager, at the end of the year. He was presented a handsome wrist watch, appropriately engraved, by his former associates, in token of their esteem. Mr. Butts is undecided on his future plans, and is at his home, 9 Farview Heights, Utica.

Dively on NAM Committee

CLEVELAND—G. S Dively, president and general manager of Harris-Seybold, has been named a member of the Economic Controls Committee of the National Association of Manufacturers, according to NAM News. Mr. Dively recently was elected president of the Cleveland Branch, National Metal Trades Association, for 1948.

L. B. MCKNIGHT

Erving Mills Name Fish Director of Manufacture

ERVING, Mass.—James Fish, for the past 15 years superintendent of the Patterson Parchment Paper Company of Bristol, Penna., has been appointed director of manufacturing at the Erving Paper Mills. Fish is third vice-president of the American Pulp and Paper Mills Superintendents' Association and is known for his advancements in the techniques of papermaking.

He was born in England and after working in English paper mills came to this country at the age of 19. He became associated with the research department of the Brown Co., Berlin, N. H., on experimental pulps and papers. Since that time he has done extensive testing at the Erving paper mills and has been consultant while employed at Patterson Parchment.

Byron Weston Promotes Wilson and Tupper

DALTON, Mass. — Officials at the Byron Weston Company have made known that in connection with the company's modernization program and the relocation of certain operations, there have also been personnel changes. In addition to their present duties, Carl Wilson, superintendent of the manufacturing department, will supervise the operation of the paper driers, and Paul Tupper, superintendent of the finishing department, will be in charge of the shipping department personnel, it was announced.

Chain Belt Elects 3 Vice-Presidents

MILWAUKEE—Chain Belt Company Board of Directors has elected three vice-presidents.

L. B. McKnight, who joined the company in 1927, has been elected vice-president with executive responsibility for the two heavy machinery divisions, conveyor and process equipment and the construction machinery. Mr. McKnight was executive assistant to the president of the company and previously was manager of the conveyor and process equipment division.

O. W. Carpenter has been elected a vice-president of Chain Belt Company in charge of finance. Mr. Carpenter was formerly secretary-treasurer and a director of the Kearney and Trecker Company, and came to Chain Belt Company in 1943.

B. F. Devine, elected vice-president, started with Chain Belt Company in 1909. He served as sales manager of the construction machinery division, and later as manager of that division. Mr. Divine will continue his duties as manager of the construction machinery division.

Nelson Heads Centennial Group

KAUKAUNA, Wis.—L. F. Nelson, president of the Badger Tissue Company, a former mayor of Kaukauna, has been appointed chairman of the Kaukauna committee for the celebration of the Wisconsin Centennial. The appointment was made by Mayor Joseph F. Bayorgeon.

JUAN P. BOSCH

has rejoined Bulkley, Dunton Paper Company, S. A. in New York as manager of sales in several Latin-American countries. Mr. Bosch had left Bulkley, Dunton for a brief spell to take charge of the Buenos Aires office of Van Reekum Paper Inc. Previous to that he has been with Bulkley, Dunton for six years. He is a veteran of the paper business with a varied export experience of 22 years.

All were Welded . . .
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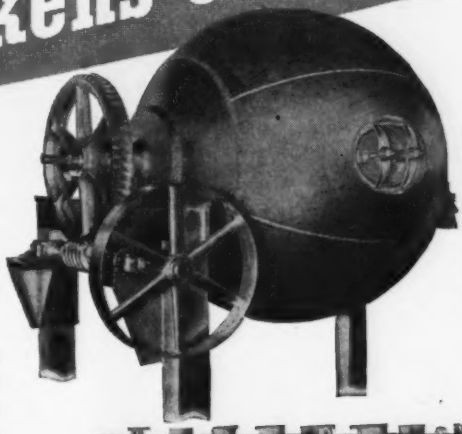


Biggs Boiler Works, Akron, Ohio, selected 5% Lukens Nickel-Clad Steel for this laboratory-type globe rotary digester, 6'0" I.D. It was welded according to U-69 Code specifications for a working pressure of 200 psi and tested at 400 psi.

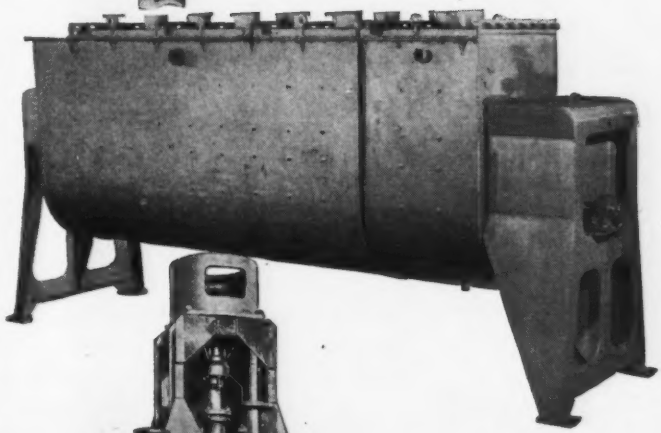
Want to cut your costs of making pressure equipment corrosion-resistant? You can do it with a Lukens Clad Steel.

Corrosion resistance is provided by a cladding of stainless steel, nickel, Inconel or Monel, permanently bonded in a uniform thickness to a backing of any ASME plate specification steel. Structural strength of the composite plate is equal to, or greater than, the tensile of A-285 Grade C steel.

Economy results from use of the corrosion-resistant material in a cladding of from 5 to 50 per cent of total plate thickness. Savings in material costs may be as much as 50 per cent, compared with solid plate of the cladding material.

Fabrication offers no unusual problems. Ordinary commercial methods are used for welding to meet requirements of paragraphs U-68 and U-69 of the ASME Code. No special equipment is needed for bending, shearing, pressing or other forming operations.

For *any* equipment exposed to corrosive processes that are accelerated by heat and pressure, it will pay you to get the facts about Lukens Clad Steels. Information on Lukens Stainless-Clad Steels is contained in Bulletin 338; on Nickel-Clad, Inconel-Clad and Monel-Clad Steels, in Bulletin 255. Lukens Steel Company, 403 Lukens Building, Coatesville, Pennsylvania.



Steam jacketed zinc oxide mixer, fabricated of 20% Lukens Stainless-Clad Steel, type 347, by Lukenweld, Division of Lukens, Coatesville, Pa. Tank and covers are double jacketed for heating at 15 psi.

★

Agitator kettle for chlorinated hydrocarbons, fabricated by Steel and Alloy Tank Co., Newark, N. J., using 20% Lukens Nickel-Clad Steel. Operating pressures are 25 psi at 650 F. in the body; 125 psi in the jacket.

LUKENS
Nickel-Clad Stainless-Clad
Inconel-Clad Monel-Clad
STEELS
★

SOLID METAL ADVANTAGES WITH CLAD STEEL ECONOMY

NLRB Draws Line On Time Study Men

HOLYOKE, Mass. — The National Labor Relations Board, in its sharpest split since the Taft-Hartley Law went into effect, has ruled that time-study men are professional employees and as such, are entitled to protection under the law. The ruling came in an important test case involving the Worthington Pump and Machinery Company here.

The board voted unanimously to order the company to bargain collectively with the Time and Motion Study Association, an independent union representing the company's 17 time-study experts at the Holyoke plant.

But a sharp 3-2 split developed over whether the time-study men properly should be classed as workers or management.

Board Chairman Paul M. Herzog and members John M. Houston and Abe Murdock said that time-study men are essentially "fact-finders" with no "substantial" voice in management. They held them to meet the "professional employee" test set up by the Taft-Hartley Act.

Members James J. Reynolds and J. Copeland Gray voted with the board majority because they said it was the apparent intent of Congress to give such employees bargaining rights. But Reynolds and Gray both felt that time-study men were basically part of management.

Reynolds said he would support the majority decision only as long as the union remained independent. The board gave the union 30 days to file non-Communist and financial affidavits required by the new law before board services can be used.

The decision in the Worthington Pump case sets up the first "professional employees unit" authorized under the new labor law.

Container Corporation Plans New Box Plant in Muskogee

CHICAGO—A new plant to produce corrugated shipping containers in Muskogee, Oklahoma, soon will enable Container Corporation of America to improve its service to present customers and to meet the growing demands of industrial activity in northeast Oklahoma and the surrounding area. This information is contained in an announcement released by Ira C. Keller, Vice President of Container Corporation of America, in charge of its southwest, eastern and Pacific Coast properties.

With approximately 25,000 square feet of floor space, the new building will be erected through the cooperation of the Muskogee Industrial Foundation on a site now under consideration. J. R. Neil, General Manager of Container Corporation's Southwest Division in Fort Worth, Texas, will supervise operations of the new property.

Kalamazoo Installs Two Jones Jordans

KALAMAZOO, Mich. — Kalamazoo Paper Company has recently installed two new Jones Jordans. One is Majestic size and the other Imperial size. They are both equipped with Nowave design phosphor bronze plug and shell filling and with SKF Bearings. The Jordans are direct driven, the Majestic with a 300 HP motor and the Imperial with a 250 HP motor.

ARCH CARSWELL

has been named to the newly established position of general sales manager of the St. Regis Paper Company's Multiwall Bag Division. He is succeeded by

H. W. SLOAN

who was previously assistant Pacific Coast manager. The change became effective this week with Carswell's removal to the New York office.

Brown Co. Acquire Androscoggin Land

BERLIN, N. H. — Acquisition by Brown Company of an interest in 71,436 acres of timberlands in the Androscoggin River valley has been made public by President Frederic G. Coburn. Mr. Coburn said the acquisition was 5/24 undivided interest in the timberlands, which are located in the towns of Success, Cambridge, Errol and Wentworth Location. The interest acquired by the company has been held for many years by several of the heirs of Thomas Upham Coe.

Mr. Coburn pointed out that acquisition of this interest is in line with the company's policy of improving its pattern of timberland holdings with a view to safeguarding its future long-range pulpwood supply.

Recently, Brown sold some of its timberlands which were inaccessible to the mills. It is now replacing those lands with timberlands which are more accessible and consequently more economical to operate.

"This increase in acreage and improvement in land pattern is a vital part of the present program of sustained yield management of the timber holdings," Mr. Coburn said.

Bergstrom Output Will Jump to 105 Tons

NEENAH, Wis. — Production by Bergstrom Paper Company will be 105 tons daily when current installation of a second new paper machine has been completed. This will be almost ten times as much as was produced when Dederick Waldemar Bergstrom formed a corporation in 1904 to purchase the Winnebago Paper Company.

Bergstrom only a few months ago began construction of a warehouse north of its present mill and another warehouse project on the Dixie road. Two Bergstrom sons, John and Nathan, and a grandson, D. W. Bergstrom III, are carrying on the work of the late senior Bergstrom.

Tallahassee Still Hopes For Paper Mill Action

TALLAHASSEE, Fla.—Cliff Davenport, manager of the Tallahassee Chamber of Commerce, states this week that although a group of Ohio financiers has abandoned plans for industrial development at Camp Gordon Johnston, there is hope that a paper company might take over part of the warbuilt community as a site for a new plant.

Mr. Davenport said he had conferred with officials of the Mobile Paper Company, one of the original bidders on the tract, and they had assured him they are still interested in acquiring parts of the property.

As noted, one of the assets of the Army camp is a Carrabelle-to-Tallahassee railroad.

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ACCURATE, DEPENDABLE "INDUSTRIAL SECRETARIES"
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AUTOMATIC CONTROLLING AND RECORDING INSTRUMENTS

Dexter Sells Frontenac Mill Plans New One for Glassine

WATERTOWN, N. Y.—The Frontenac paper mill at Dexter, owned and operated for years by the Dexter Sulphite Pulp & Paper Company, has been sold to I. Lawrence Lesavoy of New York City, who has organized a new corporation to be known as the Frontenac Paper Corporation. Coincident with the sale the management of the Dexter Sulphite Pulp & Paper Company revealed plans for the construction of a new mill in which glassine paper will be manufactured.

The steel for this new mill, which will be built adjacent to the sulphite pulp mill, has arived at Dexter and work on its construction may be started by early spring and completed by the last of the year.

The new building will be 300 feet long and 72½ feet wide. A new machine has been built and delivered by the Bagley & Sewall Company of this city. The machine is now in storage. Later another machine will be purchased for the new mill. At present the main mill of the Dexter Sulphite Pulp & Paper Company manufactures 95 tons of sulphite pulp daily as well as twisting tissue and other tissue papers.

The Frontenac paper mill will continue to manufacture all varieties of paper specialties, it is said. This mill will be operated separately and distinctly from the Dexter Sulphite operation. Business will be continued without interruption as in the past by the new company, according to plans as revealed.

Approximately the same complement of employes will be continued and the Dexter Sulphite company will supply the Frontenac with its requirements for pulp over a period of years.

Arthur Alcombrack, an experienced operator, who has been with Dexter Sulphite for some years, has been retained as the local manager of the new corporation. He was formerly in Carthage and has had much experience in pulp and paper mill operation, having been formerly associated with Crown Zellerbach Company and the St. Regis Paper Company.

The management of Dexter Sulphite Pulp & Paper Company has, up to this date, concentrated on improving its sulphite mill and has had, for the last year and a half, several contracts under construction by Merritt-Chapman and Scott Corporation of New York City. These include the erection of a new power plant with a large Babcock and Wilcox boiler installation, and in addition a completely equipped 3500 K.W. steam turbo power generating plant installed in a new building, designed and built by General Electric Company. Two new stainless steel clad digesters have been delivered and are now being installed. A new chip bin has been built, the acid making plant has been overhauled and modernized, and many other improvements have been made.

The Frontenac Paper Company was one of several formed in this country 60 years ago when the newsprint industry was in its heyday in the North Country. The incorporation of the Frontenac company at a capitalization of $60,000 was registered on September 12, 1889, under the laws of New York State.

Inland Container Starts Macon Operations

MACON, Ga.—According to Manager Walter Davis, corrugated containers are rolling off the assembly line with "a minimum of difficulty" at the Inland Container Corporation. The corporation is one of the industries which it was anticipated last year would be in operation early in 1948.

Meanwhile, it has been announced by the Macon Kraft Company that it expects to begin operations within the next thirty to sixty days.

Appleton Locks Report Increased Traffic

APPLETON, Wis.—Increased shipments of coal and logs were partly responsible for a 17 per cent in lockages in this city last year than in 1946, according to Uno G. Ohman, area engineer for the United States Engineering Corps.

Nearly 134,000 tons of coal went through the locks in 1947 as compared to 116,000 tons in the previous year. Much of this went to Fox river valley paper mills and to utilities which supply them with a part of their power needs. As against no logs shipped through the Appleton locks in 1946, the 1947 report showed almost 700 tons. The number of other commercial and of pleasure craft also showed a marked increase.

Crossett Distributes Free Pine Seedlings

CROSSETT, Ark.—The Crossett Lumber Company is giving pine seedlings free of charge to landowners in Ashley and Drew counties who will plant one acre or more, in an effort to encourage supply of future timber for the pulp and paper industry operated by the company. Farmers are asked to plant prior to March 1 and to use six-by-six foot spacing of 1,200 seedlings to the acre. Demand for pine pulpwood is constantly increasing.

BROWN PULP SALES STAFF MAKES PLANS

Members of the Pulp Sales Division of the Brown Company met in New York at the close of the year for discussion and planning of 1948 Floc sales program. Subjects discussed during the early meetings included 1948 advertising program, new potential fields and prospects, production controls, research programs, and market research on consuming fields. Subsequent meetings were confined entirely to pertinent discussions of sales and promotion activity in 1948. Sales forecast and regional territory quotas were established for all grades. The closing meetings were devoted to 1948 Pulp Sales' activities.

Those in the group include: (Seated l. to r.) D. P. Brown, J. J. McDonald, P. M. Goodloe, W. L. Gilman; (Standing l. to r.) H. S. Chellis, Henry Eaton, W. A. Littlefield, R. M. Cleland, R. J. Van Nostrand, T. L. Reiling; (Rear) J. A. Elston, M. A. Hescock, C. E. Duff.

We would like to help you find new and profitable uses for

AMERICAN ANODE *latices and mixes*

★

MANY seemingly impossible things have been done lately with American Anode latices and mixes. For example, high-altitude oxygen masks with intricate systems of ducts and metal inserts; meteorological balloons that are 5 feet in diameter uninflated, 28 feet inflated, that rise more than 20 miles into the air; amazingly complicated surgical catheters with 3 or more tubes, yet made in one piece.

American Anode latices and mixes are also used as coatings and impregnants for textiles and paper, and as adhesives in a wide variety of applications.

Most of these uses are the direct result of the work done by American Anode development men in our completely equipped development and research laboratory—men with the experience needed to permit us to offer you a *complete* research, design, engineering and production consultant service.

Don't assume that a product can't be made—or a problem solved—with latex until you've consulted with American Anode development men.

Latices and compounded mixes of GEON, HYCAR, Saran, neoprene, crude rubber and GR-S are available. For more information about these modern materials—*and proper methods of using them*—please write Department AD-1, American Anode Inc., 60 Cherry St., Akron, Ohio.

AMERICAN ANODE

INCORPORATED

CRUDE AND AMERICAN RUBBER LATICES, WATER CEMENTS AND SUSPENSIONS

FINANCE

Alexander Terms '47 Nepco's Busiest Year

PORT EDWARDS, Wis—John A. Alexander, president and general manager of Nekoosa-Edwards Paper Company, declared in a special statement recently that "The year 1947 has been one of the most active in Nekoosa-Edwards' 60 year history. Despite disappointing delays, gratifying progress has been made in physical and technical expansions and improvements during the year now closing. In the face of unpredictable market conditions, we anticipate no severe let-down at least during the first six months of the new year."

"We are still unable to fill the demands of customers of many years standing and the situation will apparently carry over well into 1948. We are planning to run at full capacity unless choked by material shortages or lack of shipping facilities. Production for 1947 increased over the previous year and our preliminary plans for 1948 point to a similar advance," the statement continued.

Mr. Alexander pointed out that, while the expansion program in which Nekoosa-Edwards is currently engaged has suffered disappointing delays due to late material and equipment deliveries, satisfactory progress has been accomplished in the basic phases. The new multi-stage Kraft bleachery at Nekoosa is now in production, as is the new Nekoosa filter plant, which is designed to filter 3,600 gallons of Nepco Lake water per minute with a color of five parts per million or less. The new bleachery, which was under construction for several years, is housed in a brick, steel and concrete structure 68 x 72 feet in size, consisting of basement and four stories. All equipment is of the very latest design and embodies the newest technical advantages known to the trade. "Improved processes incorporated in the new plant will produce pulp of superior quality both as to strength and brightness," Mr. Alexander declared, "and will add another link in the steady progress of improved papers."

In addition to the creation of new facilities, existing buildings were im-

(Continued on page 20)

JOHN A. ALEXANDER
Reports Nepco's Best Year

Scott Distributes Shares To Five-Year Employes

CHESTER, Pa.—Scott Paper Company has distributed a share of common stock to each employe with five or more years of service, under a plan announced recently by President Thomas B. McCabe.

Employes with less then five years of service will receive a share on their fifth anniversary of Scott employment. The plan also provides that each person will receive an additional share when he reaches the tenth service anniversary, the fifteenth, the twentieth and each later anniversary constituting a multiple of five years.

All Scott plants and those of its subsidiaries are included in the plan and 1,403 persons are participating in the initial distribution. At the Marinette Paper Company plants, 362 employes, all with five or more years of Scott service, are receiving shares.

The distribution is not a bonus, but is described by Mr. McCabe in his letter of announcement as a plan developed to make it possible for every employe to become a Scott shareholder.

"For many years," McCabe said, "it has been our hope that some day all Scott people would be shareholders in the business and thereby participate, even in a modest degree, in the ownership of the company and as a result feel a greater responsibility for its progress."

Flambeau Raises Pay Scale

PARK FALLS, Wis.—Effective January 5 the Flambeau Paper Company granted an hourly increase of five cents to its entire force, bringing the base rate to 98 cents. Hours of work remain at 48. Both unions at the plant are affiliated with the A.F.L.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending January 10, 1948

STOCKS

	High	Low	Last
A. P. W.	5	4¾	4¾
Armstrong Cork Co.	49½	46	46
Armstrong Cork Co., pf.	94¼	91	92
Celotex Corp.	27¼	26⅜	26⅜
Celotex Corp., pf.	20½	20	20
Certain-Teed Products Corp.	17¾	16½	17
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	22	21⅛	21⅛
Champion Paper & Fibre Co., pf.	100¾	99	99
Congoleum Nairn Co.	31⅜	30¼	30¾
Container Corp. of America	42½	41¾	42
Container Corp. of America, pf.	95½	95½	95½
Crown Zellerbach Co.	34⅛	33	33¼
Crown Zellerbach Co., pf. 4.20	97¼	96½	97
Crown Zellerbach Co., 4 pf. 4	127¼	123¼	123½
Dixie Cup Co.	38	37¾	37¾
Dixie Cup Co., A	53½	52	52¼
Flintkote Co.	37½	35	35
Flintkote Co., pf.	102	101½	102
Robert Gair	8⅞	8¼	8⅜
Robert Gair, pf.	20	19½	19½
International Paper Co.	53½	51¼	52
International Paper Co., pf.	....	....	....
Johns-Manville Corp.	41	40	40½
Johns-Manville Corp., pf.	111	110	110
Kimberly-Clark Corp.	23	21¾	22
Kimberly-Clark Corp., pf.	102	98½	98½
Mac Andrews & Forbes	40	40	40
Mac Andrews & Forbes, pf.	....	....	....
Marathon Corp.	23	21¾	22½
Mead Corp.	20	19¼	20
Mead Corp., pf. 4¼	93	93	93
Mead Corp., pf. 2	41	41	41
National Container Corp.	13½	13	13⅛
Paraffine Companies, Inc.	79	76½	78
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	30¼	29½	29⅝
Rayonier, Inc., pf.	34⅛	33½	34⅛
Ruberoid Co.	64	62½	64
St. Regis Paper Co.	10⅛	9¾	9⅞
St. Regis Paper Co., pf.	82	82	82
Scott Paper Co.	44¾	43	43⅛
Scott Paper Co., pf.	95	93½	95
Sutherland Paper Co.	43¼	42	42
Union Bag & Paper Corp.	34⅜	32¼	32¼
United Paperboard Co.	....	....	....
U. S. Gypsum Co.	105	104	104
U. S. Gypsum Co., pf.	174	173	174
United Wallpaper	5⅞	5¾	5⅞
United Wallpaper, pf.	....	....	....
West Virginia Pulp & Paper Co.	44	42	42½
West Virginia Pulp & Paper Co., pf.	104	103½	104

BONDS

Celotex Corp., 3¼s '60	....	....	....
Certain-Teed Products Corp., 5½s '53	....	....	....
Champion Paper & Fibre Co., 3s '65	98¼	98¼	98¼
Mead Corp., 3s '66	98	98	98

New York Curb Exchange

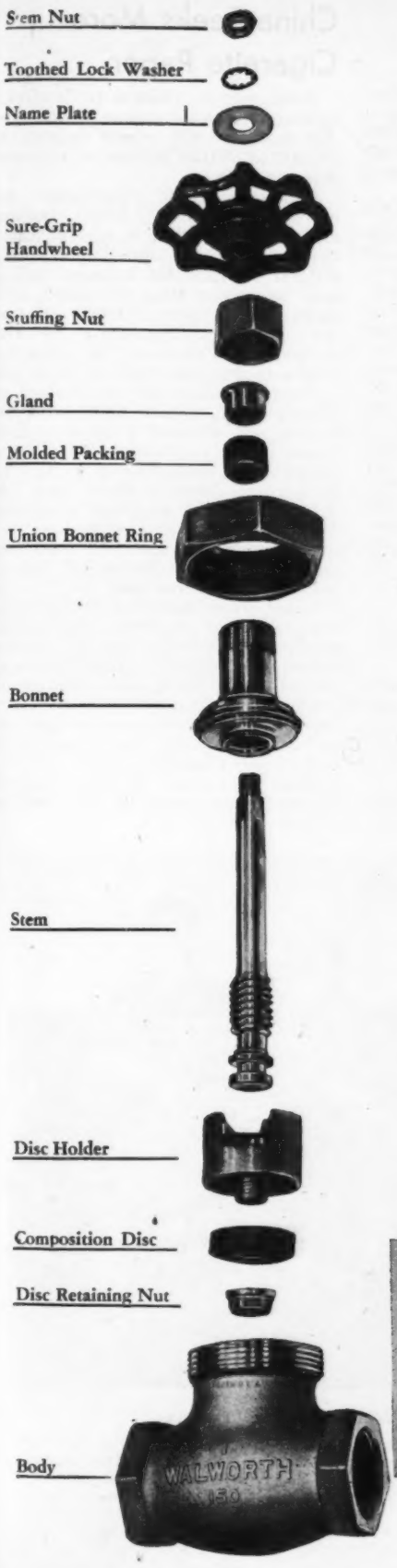
High, Low and Last for Week Ending January 10, 1948

STOCKS

	High	Low	Last
Great Northern Paper Co.	44¾	42	44⅜
Taggart Corp.	10½	10½	10½

BONDS

American Writing Paper Co., 6s '61	....	....	....



TO MAKE A GOOD VALVE BETTER

Walworth has redesigned and improved its No. 95 Quality Bronze Globe Valve.

150 pounds working steam pressure at 500F

300 pounds cold water, oil, or gas.

Can be repacked under pressure when fully opened.

The Walworth No. 95 Bronze Globe Valve has always been tops with piping men because they liked these features: Renewable composition disc; lock-on, slip-off disc holder; union bonnet construction; deep stuffing box; tough bronze body made of Composition M (ASTM B61).

Now Walworth has added these improvements: (1) New cylindrical disc holder that accurately guides the disc to the seat, regardless of the position in which you install the valve. (2) Newly designed, air-cooled, sure-grip handwheel that you can grab and turn, even when wearing greasy work gloves. It has a tapered square hole sized to gage to fit snugly on the finished square of the stem. (3) Toothed lock-washer to prevent the stem nut from becoming loose. (4) All parts have been redesigned to give maximum service and strength.

Walworth Quality Bronze Valves are available in Globe (No. 95), Angle (No. 96), or Check (No. 97) types and in sizes from ¼ to 3 inches (check valves ¼ to 2 inches). Ask your Walworth distributor to show you the improved Walworth No. 95 Bronze Valve, or write for further details.

WALWORTH

valves and fittings

60 EAST 42nd ST., NEW YORK 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

Montreal Interests Plan Alberta Mill

TORONTO — R. O. Sweezy, Montreal financier, is prominently mentioned in connection with a newspaper story coming out of Edmonton, Alberta, to the effect that plans for a new pulp and paper mill in that Province are well under way. The estimated cost of the proposed development would be $14 millions. The tentative proposal calls for an integrated pulp, newsprint and kraft mill. It is understood the newsprint would go to western United States publishers.

The mill's operations at the outset would be limited by the availability of power and would be on a comparatively modest basis. Present available power is sufficient to operate only one newsprint machine, which would mean production of approximately 200 tons a day, or 60,000 tons annually. Mill construction will provide for expansion to an ultimate production of 600 tons a day. It is also proposed to install a wrapping paper machine which will take care of the mill's requirements.

Neither provincial authorities or mill backers have yet specified the exact location of the mill, but a provincial spokesman is reported as stating that the promoters are interested in using natural gas as a source of power. Mill backers say that no expenditure will be required for power development, at least in the initial stages.

Pulpwood supplies for the mill would come from the Alberta foothills, probably in the area northwest of Edmonton. Lands Minister Hon. N. E. Tanner has stated that surveys indicate that there is no question of the adequacy of timber. Spruce and jackpine from Crown timber lands leased from the Province would provide raw material for the mill. This would indicate that the pulp mill will produce both groundwood and kraft pulp. Kraft pulp from the jackpine would likely be used in the manufacture of wrapping paper. Rail facilities are said to be adequate to handle pulpwood shipments to the mill.

The method of financing has not been made public, but it is believed that a method may be adopted similar to that outlined to U. S. publishers for the erection of a New Brunswick mill some months ago. If this procedure is followed, western U. S. publishers would probably be asked to subscribe a certain sum of money for every ton of newsprint for which they contract.

Backers of the proposal are said to be satisfied that Alberta is ideally situated to serve the western United States newsprint market.

Wisconsin Payrolls Reflect Busy Month

MADISON, Wis.—Employment and payrolls in the manufacture of paper and allied products in Wisconsin showed an increase in November, 1947, when compared with the preceding month, according to the Industrial Commission of Wisconsin.

The report estimated that 28,200 were employed in paper plants during November, compared with 27,900 in October, an increase of 1 per cent. Estimated weekly payrolls were $1,553,000 and $1,540,000, representing an increase of 0.9 per cent. The average working week was 44.4 hours and average weekly pay was $55.02, or an hourly rate of $1.239.

Twenty establishments producing paper and allied products in Milwaukee county reported 3,337 employes in November, an increase of 1.6 per cent over the previous month. Weekly payrolls averaged $189,347, a decline of 0.9 per cent compared with October.

Average weekly pay per worker $56.74 for 45.1 hours, or $1.257 per hour.

Pacific Mills Plants Set Safety Records

VANCOUVER, B. C. — Two Pacific Mills' operations, employing 350 plant workers, have established an all-time safety record by amassing a combined total of more than 400 accident-free days at the year's end, it is announced by Paul E. Cooper, president, and E. W. Campbell, personnel director.

China Seeks More Cigarette Paper

WASHINGTON—Chinese trade circles estimate cigarette import quotas for that country will permit import of 600,000 to 800,000 bobbins of cigarette paper in 1948.

Chinese cigarette manufacture requires in excess of 1,500,000 bobbins annually. For 1947, it was expected that quotas would allow import of 1,000,000 to 1,250,000 bobbins, and it may be shown later that final 1947 figures were upped. Otherwise, said trade sources as reported to the Department of Commerce, the projected 1948 estimates may have to be raised.

American observers are inclined to discount local opinion that China can become self-sufficient in the immediate future in this commodity. The domestic product is made from a mixture of 80 percent domestic hemp and less than 20 percent imported woodpulp. Difficulty was reported in the past year in obtaining sufficient pulp and this will hinder any expansion of Chinese manufacture, it was said.

Importers or foreign manufacturers' representatives distribute their cargo partly through dealers and the balance directly to cigarette manufacturers. Owing to the anticipated shortage of foreign paper, cigarette manufacturers there have put increasing pressure on authorities to allow them more control of paper imports, which are now allotted on a quota basis to a group of importers certified by the Chinese Export-Import Board.

ALLIED PAPER SALESMEN ELECT NEW OFFICERS

Officers newly elected at the December meeting of the Allied Paper Salesmen's Association, held at the Hotel Syracuse, Syracuse, N. Y., relax before returning to their territory. (left to right) George Austin, (Lily Tulip Cup Company) Secretary-treasurer; Mel S. Kelley, (Southern Kraft Division, International Paper Company), President; Ray Herzog, (Nekoosa Edwards Paper Company), Retiring President; Bill Kennedy, (Southern Advance Bag & Paper Company), Vice-President.

Here's my New Year's resolution

START 1948 RIGHT, THIS WAY—

First, make a complete and honest survey of your equipment that will show you where it has not been standing up as it should; find out where maintenance, repair and cleaning costs are out of line because the materials you are now using do not measure up to the job.

Then, tell us under what conditions your equipment operates—the corrosive products it has to handle—what temperatures and pressures are employed — whether erosion is a problem—the sort of abusive treatment it must withstand—how much importance you place on freedom from product contamination, on easier cleaning and greater safety.

Once we know these things, our stainless steel specialists will tell you which of the various types of U·S·S Stainless will best meet your needs . . . and they'll show you, too, how and where this time-tested steel can be most economically applied to obtain the results you desire.

We don't know of any better way to insure you a happier and more prosperous New Year.

USS STAINLESS STEEL — UNITED STATES STEEL

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

S-144

UNITED STATES STEEL AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago & New York
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh & Chicago · COLUMBIA STEEL COMPANY, San Francisco
NATIONAL TUBE COMPANY, Pittsburgh · TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham
UNITED STATES STEEL SUPPLY COMPANY, Warehouse Distributors—Coast to coast: UNITED STATES STEEL EXPORT COMPANY, New York

Steele Traces History of the Institute

APPLETON, Wis.—The history and development of the Institute of Paper Chemistry were discussed by Dr. Westbrook Steele, executive director, in a talk January 6 before the Appleton Rotary club.

Dr. Steele pointed out that when representatives of 19 paper and pulp mills in Wisconsin and board of trustees of Lawrence college incorporated the Institute in 1929, nowhere else in the world was there any similar institution. In the years that have followed, however, the plan of cooperation between education and industry to provide trained men well-schooled in the techniques of specific fields has been adopted by other industries and in other nations.

Organization of the institute, he said, has brought world-wide recognition to Appleton, to the paper industry and to the Lawrence college community. Visitors from all over the world come to inspect the institute's facilities; its technical library has been adjudged one of the most important in the field in any one place in all the world.

Purpose of the institute was and is to train men at the graduate level, to create a research center for the pulp and paper field and to provide for all the existing literature of the industry.

The men the institute trains, Dr. Steele pointed out, are bridges between science and research in the paper and pulp industry and the production needs of that industry. The students, restricted to 15 each year, are recruited from all over the United States. The screening process is severe, for the academic cost of maintaining those students, with a faculty-student ratio of one instructor to every 1.7 students, is uncommonly high. It is estimated that exclusive of scholarship aid, it costs about $5,000 per year per student.

Because of its unique concept, the institute requires an unusually large faculty of diversified interests. Under the institute's plan, each faculty member not only teaches but conducts research himself so that his teaching and that of the entire organization is dynamic. That program was brand-new at the time of its inception, Dr. Steele said.

The institute started with a guaranteed 5-year budget of $40,000 per year for operation. There were no specific arrangements for financing equipment at the beginning, but as the years have passed, the institution has grown from rented space in the college gymnasium, a staff of two persons, three students and about $50 worth of equipment to an organization backed up by those statistics:

A physical plant the replacement value of which is better than $2,000,000; beautiful permanent buildings on the south side of the city; a 1947-1948 budget of $750,000; a yearly payroll of about $520,000; and some 200 families connected with the institute staff.

Hundreds of articles, many books, many chapters in scientific volumes, hundreds of patents granted and more pending have come out of the institute's 18 years. Its total membership has grown to 107 companies representing a total of 70 percent of all the paper and pulp production in the United States. During the war years many institute men were on loan to the government for special services, the executive director recalled; much work the institute did was then and still is restricted and secret.

The institute records show that never in its 18-year history has it had fewer then 10 jobs available at the end of each year for each of its graduates. Its graduates are awarded degrees of doctor of philosophy by Lawrence college upon certification by the institute.

Marinette Retires Thirteen Old Timers

MARINETTE, Wis.—Thirteen men who served a total of 367 years with Marinette Paper Company retired with the start of the new year. They will receive a monthly benefit for life under the company's pension plan. Joseph Frink was an employe for 54 years and Albert Belonga for more than 50 years. Others in the group included:

Joseph Wiegers, 31 years; Henry Bannow, 30 years; Robert Joseph Boileau, 28 years; Henry Harms, 27 years; Fred Dufresne, 27 years; George Belaire, 26 years; James Gray, 23 years; Henry Van Harren, 22 years; William Gilbert, 15 years; and Charles Larson, 14 years.

Underwood & Underwood

STEPHEN GOERL

Goerl Sets Up Agency To Serve Paper Firm

NEW YORK — A new agency to specialize in the advertising and merchandising of pulp, paper, paper products, and packaging materials has been established by Stephen Goerl, formerly advertising and sales promotion manager of the Bulkley-Dunton organization. Operating under the firm name of Stephen Goerl Associates, the agency is located at 22 East 40th St.

Prior to joining Bulkley, Dunton five years ago, Mr. Goerl was connected with Young and Rubicam, New York, where he handled a paper product account. He has had close to twenty years' experience in advertising, sales promotion, and public relations.

Stephen Goerl Associates will continue to publish the *Pulp and Paper Bulletin* for Bulkley, Dunton and act as advertising and merchandising counsel to the organization, including its New England subsidiary, Carter, Rice & Co. Corp.

In telling of his agency, Mr. Goerl said: "It seems to me that there is not only room but a very definite need for a specialized agency such as ours. The paper and packaging industries have developed tremendously and at an extremely rapid rate in the last decade. This development continues, volume is still increasing, and new uses are still being found for the products of these industries.

"In order to serve the manufacturers and converters of pulp, paper, and packaging materials in a truly effective way, an advertising agency must have a good knowledge of their production, distribution, and merchandising problems. The average agency that handles a variety of accounts is not likely to have such knowledge, unless it has former papermen or packaging men on its staff.

"I am fortunate in having gained part of my experience at Bulkley, Dunton, an organization whose activities extend into almost every branch of the pulp and paper industry and one that does an outstanding merchandising job for its mills. From my vantage point at Bulkley, Dunton I could obtain an intimate knowledge of the various problems confronting producers, converters, users, and ultimate consumers alike, and observe how their problems affect the merchandising, promotion, and actual sale of the products. The complexities of these problems have convinced me of the great need of an agency that specializes in the pulp, paper, and packaging field—an agency that combines experience in the branches of the industries with modern advertising, merchandising, and sales promotion methods."

On the staff of Stephen Goerl Associates are G. Takaro, former advertising production manager of Bulkley, Dunton, and Jeanne Ritzen, assistant editor of the *Pulp and Paper Bulletin*.

AIR EQUIPMENT TO HELP YOUR BUSINESS

GET the Air YOU PAY FOR!

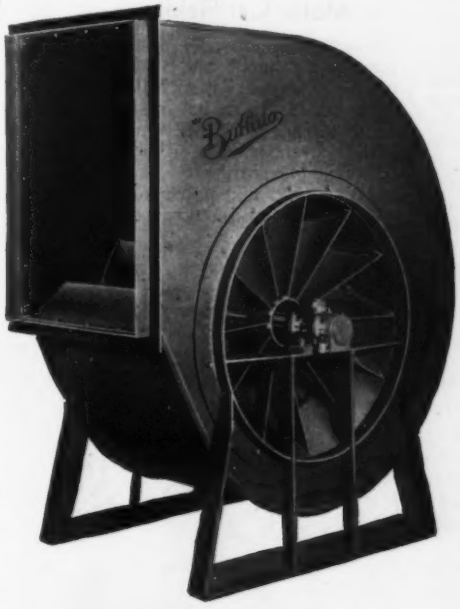
WITH Limit-Load FANS, RATED AIR DELIVERY IS ASSURED

Air jobs in the paper industries call for very definite air deliveries—deliveries you can count on in continuous service through the years! "Buffalo" Limit-Load Fans by the hundreds are giving this kind of air service ON-THE-JOB DELIVERY RIGHT UP TO RATED CAPACITY.

HUSKY, QUIET, EFFICIENT
—Non-Overloading!

"Buffalo" LL Fans are quality-built in every detail. Housings and rotors are built to handle the most air at the least cost. Directional inlet vanes and rotor blades are formed for efficiency. Rotors are dynamically balanced for vibrationless operation. Bearings and shafts are extremely sturdy.

FACTS AND RATINGS ON THE FAN YOU NEED—IN BULLETIN 3339— WRITE FOR YOUR COPY



BUFFALO FORGE COMPANY

159 Mortimer Street Buffalo, New York

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

FANS by "Buffalo"

EQUIPMENT FOR

- ★ VENTILATING
- ★ HEATING
- ★ COMFORT COOLING
- ★ PROCESS COOLING
- ★ AIR TEMPERING
- ★ AIR WASHING
- ★ EXHAUSTING
- ★ BLOWING
- ★ FORCED DRAFT
- ★ INDUCED DRAFT
- ★ PRESSURE BLOWING
- ★ CLEANING
- ★ DRYING

CUTTING AIR COSTS IN EVERY BRANCH OF INDUSTRY

Alexander Terms '47 Nepco's Busiest Year

(Continued from page 14)

proved and expanded. The manufacturing and engineering offices at Port Edwards were expanded to include additional office space and enlarged research and technical control laboratory space. The Nekoosa yard office was completed, providing facilities for better yard and freight control. The special products division building, measuring 110 x 132 feet and built of brick, steel and concrete, was completed as addition to the Nekoosa mill, providing more than 14,000 additional feet of floor space.

"To further ease the housing shortage and make home ownership and permanent housing available to Nepco employes as quickly as possible, grants of $300 each were provided by Nekoosa-Edwards to all employes starting construction oh homes for their own occupancy and complying with minimum specifications, in either Port Edwards or Nekoosa," Mr. Alexander stated. "In addition, the Nepco purchasing department lent further aid in helping to secure the necessary hard-to-get materials with which to carry through construction plans. The village of Port Edwards has extended sewer and water lines and there is probably more home building under way in Port Edwards than in most other comparable communities," he added.

Important personnel changes during 1947 were spot-lighted by Nekoosa-Edwards' president and general manager. Three vice-presidencies were established to provide more effective control over the increasingly important operations of administration, manufacturing, and sales. Appointed to the positions were, N. E. Nash, vice-president; Charles H. Reese, vice-president in charge of manufacturing; and Adam C. Remley, vice-president in charge of sales.

N. H. Christian and R. A. Nugent were appointed to the positions of manufacturing superintendents in the Port Edwards and Nekoosa mills, respectively, and W. R. Cahill was named director of personnel. R. C. Crain was named technical superintendent of the Nekoosa paper mill, and Robert Gilbert promoted to foreman of the Port Edward sulphite mill.

In discussing the financial aspect of Nekoosa - Edwards operations, Mr. Alexander pointed out the current conditions have enabled the company to build up working capital and provide funds for the improvement and expansion programs necessary to guarantee continued quality operation through future changes in the paper market. "Steps being taken now," Mr. Alexander stated, "are insuring future quality of Nekoosa-Edwards papers and protecting the company on advanced methods of materials handling and manufacturing operations."

A recent announcement of statewide importance was the statement proclaiming the establishment of Nepco Foundation, a charitable corporation to be operated exclusively for religious, charitable, scientific or educational purposes for residents of Wisconsin. Nepco Foundation became an operating entity on Friday, December 5, when Mr. Alexander presented the Foundation, on behalf of Nekoosa-Edwards Paper company, with a check for $54,000 and the deed to Nepco Court, new eight-apartment residential building in Port Edwards. Income from the apartment building gives Nepco Foundation its first regular source of debt-free income.

Organized without capital stock, no part of the net earnings of Nepco Foundation will at any time accrue to any individual member of the corporation. In addition to the real estate and initial $54,000 contribution, the foundation is assured continued support from Nekoosa-Edwards and hopes to receive occasional contributions from others, although no solicitation is planned. Operations of the Foundation are administered by a board of directors and, by virtue of the gifts, is in a position to render valuable assistance to a variety of worthy causes for the benefit of the general public.

Stack Leaves Stevens For Motor Car Field

WINDSOR, Conn. — John F. Stack, purchasing agent and traffic manager of the Stevens Paper Mills, Inc., for the past 14 years, has resigned to become president of the Packard-Windsor, Inc., and successor to H. I. Jester of West Hartford.

Mr. Stack, a member of the Board of Selectmen and a former police commissioner, was presented a leather traveling bag and a pen and pencil set at a farewell office party attended by officials of the paper company and associates of many years.

Mr. Stack became associated with the paper company when it operated only three mills, at Windsor, Westfield, Mass., and South Hadley, Mass. Since then mills have been added at Westfield and South Hadley.

He is a former secretary of the Windsor Exchange Club, has been active in civic and political affairs for a number of years, and is a member of the Transportation Committee of the Hartford Chamber of Commerce.

JOSEPH E. DUFFEY

who has been elected vice-president of the Diamond Match Company in charge of timber and production operations.

Scott Force Wins Five-Cent Raise

CHESTER, Pa.—Employes of Scott Paper Company plant this week received an average wage increase of five cents per hour, thus raising the average hourly pay rate in the plant to 63 cents more than the normal pay in 1941.

These figures were quoted this week in the annual financial report of Harrison F. Dunning, general manager at the Chester plant.

Dunning also told the employes that their wage increases from 1941 until October, 1947 had average four cents more per hour than those of workers in twenty-four other selected firms, many engaged in the pulp and paper industry. The average wage increase for Scott workers during that period was 58 cents per hour, compared to 54 cents per hour by other firms.

The plant manager also declared that average weekly earnings at the Chester mills have increased 84 per cent since 1941 and that material costs have jumped 68 per cent in the same period. Prices to consumers, he said, have risen only 35 per cent.

Cleveland Container Staff Wins Five-Cent Raise

OGDENSBURG, N. Y.—Sixty-five employees of the Cleveland Container Company have been granted a wage increase of five cents atn hour retroactive to December 15, Floyd C. VanDeusen, of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers (A.F.L.), reported last week. Negotiations for the pay raise were held between Gerald W. Mulder, Harvey Simms, and A. J. Bernier of the company, and Mr. VanDeusen, Harold Tregeser, Edward Sargent, and Charles Curbeau of the union.

The present contract between the A. F. of L. union and the container company is scheduled to expire on February 1, and negotiations are now underway to establish a new one. The paperworkers' contract with the local plant of the B.F.D. company does not expire until June 4.

BRAMMER RECORDING CONSISTENCY CONTROL

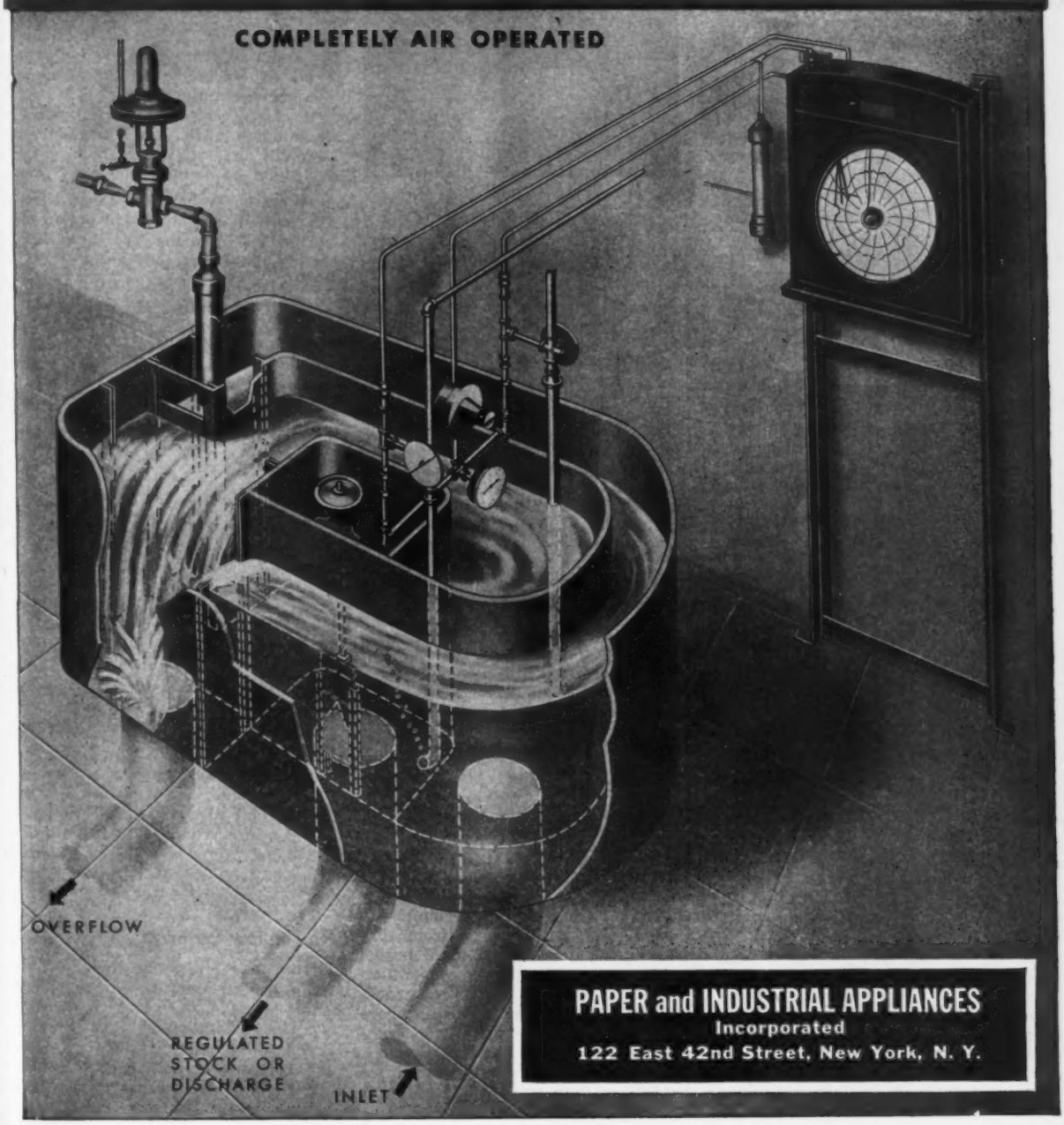
Patented and Patents applied for in U. S. A. and Foreign Countries

You know a Regulator is regulating when you see the BRAMMER, because the accurate, daily 24-hour chart on the BRAMMER CONTROL gives you the information instantly. This feature alone is regarded by many mill operators and engineers as being worth its cost.

The BRAMMER embodies many other features . . . reasons why it is becoming the most accepted Consistency Regulator in an ever-increasing number of mills.

Here are but a few of the many BRAMMER features:

Consistency adjusted by simply turning a knob. Detects immediately the slightest variation in consistency. Exposes trouble from irregular stock preparation. Records clear consistencies before and after regulation. Controls accurately and automatically over a wide consistency range. Operates pneumatically without friction errors. Requires no lubrication except on diluting water valve stem. Adjusts to individual stock box and process requirements. Instruments by Foxboro. New Catalog on request.



PAPER and INDUSTRIAL APPLIANCES
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122 East 42nd Street, New York, N. Y.

OBITUARY

E. T. Street Passes Suddenly in Sleep

DOWNINGTOWN, Pa. — Edward T. Street, President and Sales Manager of the Downingtown Manufacturing Company, passed away in his sleep during the early morning hours of January 7. Seemingly, he had been in the best of health and was in his office all of the preceding day, active and with his usual most optimistic plans for the company's future.

Funeral services were held on January 10th, at St. Paul's Church, Glen Loch, Pa., near where Mr. Street lived at Exton, just outside of Downingtown. Interment was private. He is survived by his wife, Katharine M., and his daughter, Eleanor, at home, and by another daughter, Mrs. Carl Weber of Trenton, N. J. and a son, David, of Troy, N. Y.

Mr. Street had been president of Downingtown Manufacturing Company for about a year and a half, before which he was vice-president in charge of sales and, before that, chief engineer. He contributed much to various improvements in design of the company's products and was especially active in the development of Downingtown wallboard machines to the point where they became accepted and used by practically every producer in this country and many foreign lands.

One of his more recent accomplishments of which he was particularly proud was an order from United States Gypsum Company, which he affectionately called, "Contract Unique," because of its size and scope.

Before his association with Downingtown E. T. Street was for ten years chief engineer of the Ruberoid Company and, before that, was with the Minnesota and Ontario Paper Company. He was a native of Ohio and a graduate of Oberlin College.

Mr. Street was a member of the American Society of Mechanical Engineers; the Technical Association of the Pulp and Paper Industry, the Pennsylvania Society of New York and the Newcomen Society.

E. T. STREET

Brice S. Hull

PITTSBURGH — Brice S. Hull local branch manager of Solvay Sales Division, Allied Chemical & Dye Corporation, died suddenly of a heart attack on January 2, 1948. Mr. Hull, born in Van Wert, Ohio, was graduated from Ohio State University in 1914 with the degree of Bachelor of Science in Chemical Engineering, later completing graduate work there and at the University of Pittsburgh. He did technical service work for the Drackett Company until 1922, when he joined Wing & Evans in Cincinnati in a similar capacity. In 1923, Mr. Hull became Pittsburgh branch manager for Wing & Evans, remaining in that position when the firm was absorbed by Solvay Sales in 1927.

Harral O. Pierce

CHARLOTTE, N. C.—Harral O. Pierce, manager of the branch office of Solvay Sales Division, Allied Chemical & Dye Corporation, died December 28, 1947, of a heart attack following a brief illness. Mr. Pierce joined the Solvay organization in 1910 in the paymaster department of the Solvay Process Company, where he remained until 1915 when he became a partner in Snell and Pierce, jobbers of laundry supplies. This firm was absorbed by Solvay Sales in 1922, Mr. Pierce being named first manager of the Syracuse branch office, continuing in that capacity until 1929 when he was transferred to the New York executive offices of the firm as a division sales manager. Mr. Pierce became manager of the Charlotte branch office in 1935.

Harry J. Dupont

MENASHA, Wis.—Harry J. Dupont, 53, an electrical engineer for the Kimberly-Clark Corporation, died January 6 after an illness of six months.

Born May 4, 1894, in Rotterdam, Holland, he came to this country in 1910, residing at Kimberly from 1916 to 1940, when he moved to Menasha. He began work with the corporation March 20, 1918, and in 1925 was transferred to the Neenah division, where he became associated with the engineering department three years later. Funeral services were conducted at Neenah on January 10, and burial was at Appleton.

Arthur J. Pierce Dies Of Heart Ailment

BENNINGTON, N, H. — Arthur Johnson Pierce, seventy-one, owner of the Monadnock Paper Mills, died late last week of a heart ailment after a brief illness.

Arthur Johnson Pierce became a partner in 1900 in the Bennington (N. H.) paper company then known at W. T. Barker & Company. The concern was reorganized two years later as the Monadnock Paper Mills. Mr. Pierce owned a majority of the stock and was president for many years. From 1909 to 1911 he was on the staff of Governor Henry B. Quinby.

He took an active interest in the affairs of Bennington and gave a grade school building to the community. He recently gave a bell to St. Patrick's Roman Catholic Church, of Bennington. He was a collector of antiques and took special pride in his collection of Currier and Ives prints.

A native of Milton, Mass., he was educated in England. He was a war correspondent of the *New York Times* during the Philippines insurrection of 1899.

Mr. Pierce was a representative in the New Hampshire legislature for three years and also was inspector general of the state guard under three governors.

Two brothers, Edward L., of Princeton, N. J., and Charles S. Pierce, of Milton, survive.

Mark H. Warren

BOSTON — Mark H. Warren, 84, prominent in the paper industry in Boston for many years, died January 7 at Melrose Hospital, Melrose, Mass.

Mr. Warren was treasurer of the Arnold-Roberts Company, Boston, at the time of his retirement approximately 25 years ago and had served as treasurer and president of the Boston Paper Trade Association. His home was at 108 First street, Melrose.

A son, Ralph, of Brunswick, Me.; a daughter, Mrs. Harold I. Peabody, of Bronxville, N. Y., and a sister, Miss Jennie B. Warren, of Waltham, Mass., are living. Funeral services were held January 10 in the Robinson Chapel, Melrose, with burial in Wyoming Cemetery, Melrose.

Rownellow Lathrop

HOLYOKE, Mass.—Rownellow Lathrop, a retired American Writing Paper Corp. foreman, died recently at Holyoke Hospital following a brief illness. Before his retirement several years ago, he had been in charge of the cutting room at American Writing Paper for many years.

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PITTSBURGH 30, PA.

IMPORTS

NEW YORK IMPORTS

WEEK ENDING JANUARY 10, 1948

SUMMARY

Newsprint	7287 rolls
Tracing Cloth	21 cs.
Gummed Paper	55 cs.
Serviettes	13 crates
Wallpaper	52 pkgs.
Drawing Paper	1 cs.
Filter Paper	17 cs.
Photo Paper	3 cs.
Sulphite Paper	294 rolls
Strawboard	82 rolls
Miscellaneous Paper	593 rolls

NEWSPRINT

News Syndicate Co., Colabee, Baie Comeau, 6570 rolls.

Eagle Publishing Co., Bienville, Antwerp, 75 rolls.

N. Y. Journal American, Tidaholm, Hallstavik, 435 rolls.

Gilmán Paper Co., Tidaholm, Hallstavik, 207 rolls.

TRACING CLOTH

E. Dietzgen & Co., Fort Spokane, Liverpool, 21 cs. (bleached cotton).

GUMMED PAPER

B. F. Drakenfeld & Co., American Scout, Liverpool, 55 cs.

SERVIETTES

(———), American Scout, Liverpool, 7 crates (crepe paper).

(———), Vandalia, London, 6 crates.

WALLPAPER

Hudson Shipping Co., American Shipper, Havre, 51 pkgs.

American Express Co., American Shipper, Havre, 1 pkge.

DRAWING PAPER

H. Reeve Angel & Co., Inc., Vandalia, London, 1 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., Vandalia, London, 17 cs.

PHOTO PAPER

J. J. Gavin Co., Vandalia, London, 3 cs. (unsensitized).

SULPHITE PAPER

Bleyco Paper Co., Mormacpine, Gothenburg, 92 rolls (unbleached).

Green Kriegsman Paper Co., Mormacpine, Gothenburg, 202 rolls.

STRAWBOARD

Packard Container Co., Westerdam, Rotterdam, 82 rolls.

MISCELLANEOUS PAPER

Resolute Paper Products Corp., Mormacpine, Gothenburg, 178 rolls.

Merchants Bank, Mormacpine, Gothenburg, 205 rolls.

National City Bank, Mormacpine, Gothenburg, 70 rolls.

Chemical National Bank, Mormacpine, Gothenburg, 53 rolls.

Sterling National Bank Trust Co., Mormacpine, Gothenburg, 87 rolls.

RAGS, BAGGINGS, ETC.

E. J. Keller Co., Inc., Jefferson City Victory, Antwerp, 129 bls. waste bagging.

(———), Coastal Defender, Havana, 3 bls. old cotton rags.

(———), American Scout, Glasgow, 55 bls. linen waste.

W. Barnet & Son, American Scout, Glasgow, 26 bls. woolen rags.

(———), American Scout, Liverpool, 47 bls. woolen rags, 22 bls. wool thread waste.

American Express Co., American Scout, Liverpool, 56 bls. new wool rags.

J. Stein, Herdis, Buenos Aires, 3 bls. paperstock.

Atlas Waste Manufacturing Co., Herdis, Buenos Aires, 8 bls. woolen waste.

American Cotton Products Co., Loide America, Santos, 124 bls. cotton waste.

A. W. Fenton Co., Exhibitor, Palermo, 346 bls. rags.

Industrial Trust Co., Coer d'Alene Victory, Leghorn, 122 bls. dark cottons.

A. W. Fenton Co., Coer d'Alene Victory, Leghorn, 588 bls. rags.

Manufacturers Trust Co., Exporter, Genoa, 252 bls. old waste bagging.

Irving Trust Co., Exporter, Genoa, 44 bls. scrap bagging.

E. J. Keller Co., Inc., Exporter, Naples, 162 bls. dark cotton rags.

A. W. Fenton Co., Exporter, Naples, 272 bls. dark cotton rags.

Irving Trust Co., Exporter, Alexandria, 96 bls. hessian bagging.

A. W. Fenton Co., Exporter, Alexandria, 104 bls. old waste bagging.

Continental Bank Trust Co., Exporter, Alexandria, 132 bls. jute scrap.

National City Bank, Exporter, Alexandria, 56 bls. jute bagging, 145 bls. old jute bagging.

(———), Exporter, Alexandria, 72 bls. hessian bagging, 345 bls. old bagging, 147 bls. old cotton rags.

(———), Exporter, Haifa, 52 bls. khaki cottons.

National City Bank, Parkersburg Victory, Antwerp, 187 bls. old bagging.

Irving Trust Co., Vandalia, London, 6 bls. new cotton rags, 40 bls. old khaki rags.

1st National Bank, Chicago, Rossia, Odessa, 404 bls. cotton waste.

Amtorg Trading Corp., Rossia, Odessa, 818 bls. cotton linters.

(———), Barnard Victory, Antwerp, 91 bls. jute bagging.

E. J. Keller Co., Inc., Barnard Victory, Rotterdam, 50 bls. old cotton rags.

1st National Bank, Hellenic Beach, Pireaus, 298 bls. jute rags.

Castle & Overton, Inc., Giorgios C. III, Piraeus, 67 bls. jute bagging, 94 bls. white cottons, 74 bls. linsey garments, 505 bls. colored cottons.

Chase National Bank, Dmitry Pozharsky, Leningrad, 1011 bls. pickers.

OLD ROPE

(———), Mahout, Calcutta, 65 bls. bls. old hemp rope cuttings.

(———), Exhibitor, Calcutta, 21 bls. old hemp rope cuttings.

GLUESTOCK

1st National Bank, Boston, Agwidawn, Trujillo City, 38 bdls., 59 seroons.

John Gorvers, Santa Cecilia, Callao, 35 bls.

CASEIN

American British Chemical Supplies, Mormacdawn, Buenos Aires, 1900 bags.

American Key Products, Inc., Mormacdawn, Buenos Aires, 250 bags.

American Cyanamid & Chemical Corp., Mormacdawn, Buenos Aires, 6000 bags.

New York Trust Co., Mormacdawn, Buenos Aires, 600 bags.

East Asiatic Co., Mormacdawn, Buenos Aires, 500 bags.

Callan, Simon & Norton, Mormacdawn, Buenos Aires, 1033 bags.

Hercules Powder Co., Vianna, Buenos Aires, 2000 bags.

WOODPULP

The Borregaard Co., Inc., Mormacpine, Gothenburg, 127 bls. dry chemical pulp.

Perkins Goodwin & Co., Colabee, Baie Comeau, 1529 bls. unbleached sulphite pulp, (Ryegate, Vt.), 840 bls. unbleached sulphite pulp, (Lawrence, Mass.).

PHILADELPHIA IMPORTS

WEEK ENDING JANUARY 10, 1948

Madden Reeve Angel & Co., Inc., Tidaholm, Kotka, 284 rolls newsprint.

Pulp Sales Corp., Tidaholm, Kotka, 12,445 bls. prime unbleached sulphate pulp, 2680 bls. prime unbleached glassine sulphite pulp, 1550 bls. prime unbleached strong bleachable sulphate pulp, 5750 bls. prime unbleached strong sulphite pulp.

Philadelphia Inquirer, Tidaholm, Hallstavik, 164 rolls newsprint.

Gilman Paper Co., Tidaholm, Hallstavik, 206 rolls newsprint.

Castle & Overton, Inc., American Scout, Liverpool, 55 bls. cotton rags.

Bank of The Manhattan Co., American Scout, Manchester, 118 bls. cotton rags.

Concentra Shipping Co., Exporter, Genoa, 232 bls. dark cotton rags.

Castle & Overton, Inc., Exporter, Genoa, 118 bls. old blue cotton rags, 75 bls. dark cotton rags.

Pulp Corp. of America, Mormacpine, Gothenburg, 540 bls. dry sulphite pulp.

The Borregaard Co., Inc., Mormacpine, Gothenburg, 254 bls. dry chemical pulp.

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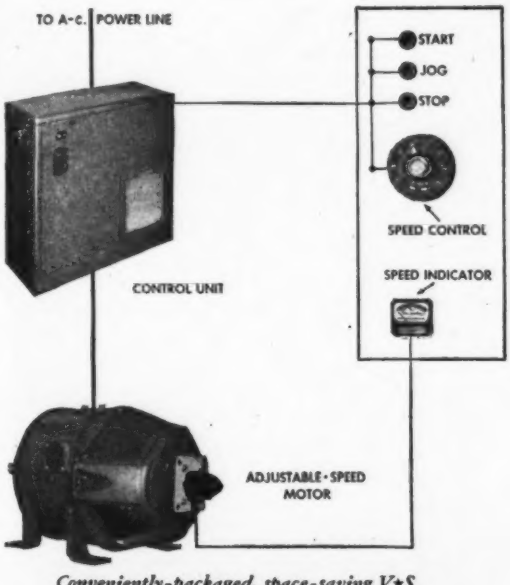
...from A-c. Circuits



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Actually, Reliance V★S Drive is an *electric transmission.* At the touch of a button your machine can be started or stopped. Turn the Speed Control knob and it can be accelerated or decelerated smoothly—over an infinite range of stepless speed changes. And with this *All-electric, Adjustable-speed Drive operating from A-c. Circuits,* control can be either automatic or manual . . . at the machine or from remote stations. The net result of V★S control is greater efficiency, faster processing, lower costs—as already proved in a variety of applications in every industry. That's why it will pay you to write today for Bulletin 311.

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RELIANCE A-C D-C MOTORS

"Motor-Drive is More Than Power"

TRENDS

OFFICE OF THE PAPER TRADE JOURNAL
Wednesday, January 14, 1948

Rumored price rises ambled into fact with first quarter deliveries of wood pulp as mills hesitatingly felt their way before hitting the trail. Generally prices of domestic and Canadian pulp were increased $10.00 a ton on all grades, with varying freight allowances, with the exception of groundwood and newsprint which averaged $6.00 a ton rise.

General prices for Swedish pulp are an "unknown." Shipments from northern ports have ceased until the ice has gone, which may be late in May from all the signs of a severe Northern winter. Southern shipments are percolating at various prices, no agreement having been reached between producers on world supply and price. It is said in Swedish journals that price will be of great importance for, at present prices, their producers will make slightly less profit here than in other world markets. It is, however the purpose of Swedish producers to supply old customers in the United States who must be in a position to compete with integrated mills. Should the margin between world market prices and those paid here in the U.S.A. for imported pulp widen, it is reasonable to expect this will react on the quantities to be sold in the American market. Preliminary steps have been taken between the Swedish paper mills and independent pulp producers for the global agreement on pulp deliveries. No result can be expected, however, until agreements are concluded.

This same source cautions that United States consumers do not over emphasize the significance of reduced pulp quotas of the bilateral Franco-Swedish trade agreement since there actually is a chance of more being exported from Sweden to France than called for in the quotas, providing trade develops favorably and if the pulp exported can be paid for in dollars or other hard currency.

* * *

A fragment of hope for the critical European paper situation comes from Poland where the industry is reported as well on its way to complete recovery. Research work in the industry's laboratories has resulted in the production of a fibrous cellulose from flax and hemp straw which assures independence of flax rag deliveries. The development of new chemical compounds for the production of sensitized paper is another "new," as well as a factory for producing special paper for the printing of designs on ceramics and porcelain. Deficiencies are still felt in cellulose, sieves, felt and some chemical raw materials, but imports of these are being balanced by the export of production surpluses. In 1946 these surpluses amounted to 1,300 tons of printing paper, 1,000 tons of parchment paper, 8,000 tons of cartons, 5,000 tons of wrapping paper, and 2,000 tons of brown cardboard. Paper is included in the country's three-year plan and foresees a considerable increase in production for the next years. Paper industry should this year be independent of cellulose import, it is expected, and paper consumption should be increased to its prewar level and afterwards exceed it.

* * *

While a foreign journalist challenged our lavish use of newsprint for advertising as "the rape of the world's forests," the congressional bi-partisan forestry bloc opened the drive for forest conservation. Chairman Sikes of Florida in his opening address to Congress contrasted this country's backwardness in forest conservation and proper timber cutting with that of the U.S.S.R. where he said the major problems have been worked out by Soviet scientists. Quoting a report from "One-Third of the World's Timber" by Professor Vassilyev, he said that there are at present in the U.S.S.R. twelve forestry institutes, eleven forestry faculties in universities and agricultural institutes, fifteen special forestry scientific-research institutions and many scores of experimental stations and laboratories in all parts of the country; whereas only twenty-three percent of our total forest land is being managed under cutting practices that rate good and high orders; the cutting on 52 percent of it rates poor and destructive. "Forest resources are needed for more than lumber and paper," Chairman Sikes said. "A good forest cover can also produce other material benefits. One of these concerns is the control of water. Much of our nation suffers from soil erosion and leaching, and the associated floods and sedimentation. These problems relate directly to the destructive run-off from unprotected lands. Good forest growth affords excellent protection against such losses."

Wood Pulp

Supplies of chemical wood pulp for prompt shipment were even more restricted this week as a result of curtailed mill production. "Consideration must still be given to the fact that market pulp is not in sufficient supply for full capacity production throughout this segment of the industry" the United States Department of Commerce reports. "In this respect" it continues "an important mill in the Pacific Northwest is currently increasing its output of sulphite market pulp, although all of its additional capacity is reported to be under sales contract. Bleached grades are cited as being occasionally scarce, a condition which while not reducing over-all paper production does restrict flexibility of operations. An exceptional but significant instance of market pulp tightness is the case of a large integrated mill which formerly sold some of its surplus pulp but has recently found it necessary not only to discontinue this policy but even to purchase quantities of market pulp for its own use. Integrated mills throughout the country with adequate supplies of pulpwood available are producing the high levels of pulp required for the record-breaking tonnages of paper and paperboard being manufactured by the industry."

Waste Paper

Accumulated stocks of waste paper were considerably reduced as supplies moved in response to moderate consumer demand and collections were slowed by weather conditions. There appeared to be a tendency to speculate on more of the same weather as old-timers interpreted signs of an old-fashioned closed winter with its resultant drag on collections and stocks. Prices are being maintained on all grades except groundwood flyleaf shavings — which advanced $5.00 a ton—and on old corrugated—which weakened through slowed demand to $21.00 in New York. Chicago reported a similar weakening on old corrugated. Stocks of mixed paper and folded news are heavier than demand, but prices are firm.

The Boston area, where trucking strikes and weather conditions made it impossible to maintain either collection or delivery service, reports the market strong on all grades except kraft which is in weak demand and is termed "soft."

Index

The index of general business activity for the week ended January 3 inclined to 153.3 from 148.7 in the preceding week, compared with 148.0 for the corresponding week of 1947. The index of paperboard production rose to 190.4 from 166.8 in the previous week, compared with 199.0 in the corresponding week of 1947.

Paper production for the week ended January 3 was estimated at 101.1 per cent compared with 74.9 (revised figure) in the preceding week, with 96.3 for the corresponding week of 1947, with 89.1 in 1946, and with 81.0 for the corresponding week of 1945.

Paperboard production for the week ended January 3 was 78.0 per cent of capacity, compared with 77.0 per cent for the preceding week, with 85.0 for the corresponding week of 1947, with 75.0 for 1946, and with 80.0 for the corresponding week of 1945.

PRICES

With the elimination of price controls on paper, pulp, rags and other materials, the quotations given below once more become indicative of trends in an open market. At the moment they can be of little more, for, while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—

Roll, contract	$96.00	to	—
Sheets	$109.00	"	—

Kraft—per cwt.—Carload Quantities
Zone A Deld. 40 lb. base wgt.

Superstandard Wrapping	$9.00	to	—
No. 1 Wrapping	6.75	"	7.50
Standard Wrapping	6.50	"	7.25
Standard Bag	6.00	"	7.00

Tissues—Per Ream 24x36 (480) 11 lb. Zone 1.

Wh. No. 1 Frd.	$1.75	to	$2.03
Wh. No. 1 M. G.	1.75	"	2.00
Wh. No. 1½	1.60	"	—
Wh. No. 2	1.55	"	—
Kraft Anti-Tar	1.38½	"	—
Kraft Unbl.	1.85	"	—
Manila No. 2	1.62	"	—

Toilet—Per Case of 100 rolls—1 M Sheets.

Unbleached	$5.50	to	$6.40
Bleached	6.50	"	7.60

Paper Towels—Per Case of 3750—

Zone 1.

Wh. Jr. M'tif'd 9¼x9½	$4.85
Br. Sr M'tif'd 10x12	3.45
Br. Jr. M'tif'd 9½x9¼	2.95
Br. Jr. Sgl. fold 10x10¾	3.10

Manila—per cwt.—C. l. f. a.

No. 1 Jute Tag	$14.50	to	—
Reg. Jute Manila	13.25	"	$15.50
No. 1 Manila	9.75	"	—

Boards, per ton—

News	$92.50	"	—
Chip	90.00	"	—
Sgl. Mla. Lt Chip*	102.50	"	—
White Pat. Coated*	128.00	"	—
Kraft Liners 42 lb.	100.00	"	—
Binders Boards	126.00	"	—

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1: Rag Content Bonds and Ledgers—

White, Assorted Items
Bonds, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext. No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	38.00	34.55	33.10
50% Rag	31.50	28.75	27.50
25% Rag	28.00	25.50	24.50

Ledgers, per cwt.

100% Rag Ext. No. 1	$54.25	$50.00	$48.00
100% Rag	$47.50	$43.90	$42.10
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Sulphite Bonds and Ledgers—
White, Assorted Items
Bonds, per cwt.

No. 1	$20.75	$18.75	$18.25
No. 2	19.75	17.75	17.25
No. 4	19.00	17.25	16.50

Ledgers, per cwt.

No. 1	$21.75	$19.60	$19.10
No. 2	20.75	18.75	18.05
No. 4	19.20	18.15	17.35

Free Sheet Book Papers—
White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated	$20.40	$19.55
No. 2 Glossy Coated	19.15	18.30
No. 3 Glossy Coated	18.40	17.60

(Per cwt.)	Case	Ton
No. 1 Antique (Watermarked)	$15.90	$15.15
No. 2 Offset	14.15 to 17.90	13.65 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. & S. C.	15.40	14.65
B Grade E. F.	Nominal	
B Grade S. C.	Nominal	

Wood Pulp

Domestic mill contract prices delivered with varying freight allowances.

	Per Short ton	ADT
Groundwood	$80.00 to $81.00	
Unbleached Sulphite	125.00 "	126.00
Bleached Sulphite	135.00 "	—
Bleached Soda	125.00 "	130.00
Bleached Sulphate	175.00 "	185.00
Unbleached Sulphate Northern	125.00 "	132.50
Unbleached Sulphate Southern	125.00 "	132.50

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

	Per Short ton	ADT
Reg. No. 1 Kraft	125.00 "	—
Unbleached Sulphite	125.00 "	126.00
Bleached Sulphite	135.00 "	—
Glassine Unbleached Sulphite (no freight allowance)	120.00 "	—
Bleached Soda	130.00 "	—
Groundwood	80.00 "	85.00
Siderums Pulping News	80.00 "	—
Hardwood and Specialty Grades	Nominal	

Swedish Quotations
On dock, Atlantic Ports

	Per Short ton	ADT
Bleached Kraft	175.00 "	185.00
Bleached Sulphite	175.00 "	185.00
Unbleached Sulphite	157.50 "	175.00
Unbleached Kraft	140.00 "	165.00

Finnish Quotations
On dock, Atlantic Ports

	Per Short ton	ADT
Bleached Sulphite	$185.00 to	—
Unbleached Sulphite	155.00 "	157.00
Unbleached Sulphate	147.50 "	—

New Domestic Cotton Cuttings

(F.O.B. Shipping Point Plus Dealer's Commission)

White Shirt	$11.50 to	—
Light Silesias	8.50 "	—
Unbleached Muslin	11.50 "	—
White Back Blue Overalls	9.00 "	9.25
Blue Overalls	8.00 "	—
Fancy Shirt	6.00 "	—
Light Percales	7.50 "	—
Light Prints	6.50 "	—
No. 1 Washables	5.00 "	—
Bleachable Khaki	7.00 "	7.50
Unbleachable Khaki	6.00 "	6.50
Cottonades	5.50 "	5.75

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.	
No. 1 Whites Repacked	$5.00 to	—
No. 1 Whites Miscellaneous	4.00 "	—
No. 2 Whites Repacked	3.50 "	3.75
No. 2 Whites Miscellaneous	3.00 "	—
Blue Overalls	3.75 "	—
Thirds and Blues Repacked	3.25 "	—
No. 1 Roofing Rags	1.90 "	2.00
No. 2 Roofing Rags	1.75 "	—
No. 3 Jute Bagging	1.60 "	—
No. 4 Brussels and hard back carpets	1.60 "	—
No. 5A Roofing Rags	1.80 "	—

New Foreign Cotton Cuttings

(Prices to Mill, F.O.B. Dock, N. Y.)

	Per 100 lbs.	
New Dark Cuttings	$5.50 to	$5.75
New Mixed Cuttings	6.25 "	6.50
Light Silesias	9.25 "	9.50
Light Flannelettes	9.25 "	9.50
New White Cuttings	12.00 "	—
New Unbleached Cuttings	12.25 "	—
Fancy Shirt Cuttings	6.50 "	7.00
Light Prints	7.75 "	8.00
Bleachable Khaki, No. 1	7.00 "	7.50
Unbl. Khaki, No. 1	6.25 "	6.75

Old Foreign Rags

(Prices to Mill, f.o.b. dock, N.Y.)

	Per 100 lbs.	
No. 1 White Linens	$14.00 to	16.00
No. 2 White Linens	12.00 "	13.00
No. 3 White Linens	8.00 "	9.00
No. 4 White Linens	8.00 "	9.00
No. 1 White Cottons	10.00 "	12.00
No. 2 White Cottons	8.00 "	9.00
No. 3 White Cottons	6.50 "	7.00
No. 4 White Cottons	5.00 "	5.50
Extra Light Prints	7.50 "	8.00
No. 1 New Light Prints	6.25 "	6.75
Med. Light Prints	5.25 "	5.75
Dutch Blue Cottons	5.25 "	5.50
Checks and Blues	4.00 "	4.25
Linsey Garments	3.00 "	3.75
Dark Cottons	2.20 "	2.60
Old Shopperies	2.50 "	3.00
New Shopperies	2.50 "	3.00

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.	
Foreign Gunny, No. 1	$5.50 to	$5.75
Domestic Gunny, No. 1	6.25 "	6.50
Light Wool Tares	5.75 "	6.25
Heavy Wool Tares	5.75 "	6.25
No. 1 Scrap Bagging	5.50 "	5.75
Foreign Manila Rope	6.00 "	6.75
Domestic Manila Rope	5.75 "	6.50
Jute Strings	4.50 "	5.00
No. 1 Sisal Strings	5.50 "	6.00
Mixed Strings	1.75 "	2.50
Mixed Strings, Outthrows	.90 "	1.10

Waste Paper

Base Prices to Mills for Average Packings

(Dollars Per Ton)
F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	155.00 to 165.00
No. 1 Hard White Envelope Cuts	145.00 " 155.00
No. 1 Hard White Shavings, unruled	145.00 " 155.00
No. 1 Hard White Shavings, ruled	110.00 " 130.00
Soft White Shavings, one cut	145.00 " 155.00
No. 1 Soft White Shavings	135.00 " 145.00
Soft White Shavings, Misc.	125.00 " 135.00
No. 1 Fly Leaf Shavings	45.00 " —
No. 1 Groundwood Fly Leaf Shaving	35.00 " —
No. 1 Heavy Books & Magazines	27.00 " —
Mixed Books	15.00 " 20.00
No. 1 White Ledger	85.00 " 90.00
New Manila Envelope Cuttings, one cut	100.00 " 110.00
New Manila Envelope Cuttings	65.00 " 75.00
Extra Manilas	25.00 " 30.00
Mixed Kraft, Env. & Bag Cuttings	75.00 " 85.00
Kraft Envelope Cuttings	110.00 " —
Triple Sorted, No. 1 Brown Soft Kraft	65.00 " 75.00
New Kraft Corrugated Cuttings	85.00 " 90.00
No. 1 Assorted Old Kraft	55.00 " 60.00
New Jute Corrugated Cuttings	27.00 " —
Old 100% Kraft Corrugated Containers	45.00 " 50.00
No. 1 News	13.00 " 15.00
No. 1 Mixed Paper	11.00 " 13.00
Box Board Cuttings	12.00 " 14.00
White Blank News	75.00 " 80.00
Overissue News	18.00 " 20.00
Old Corrugated	21.00 " 23.00
Mill Wrappers	22.00 " 25.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)

Coarse Polished—India	.28¾ to .29½
Fine Polished—Fine India	.31¾ " .36½
Unpolished—Paper Makers	.24 " .25½
Tube Rope	.24¾ " .26½
Wrapping	.30 " .32
Cotton	.55 " .70

(Hard Fiber)

Mex. Sisal	.21 " .31
Manila (Reprocessed)	.28 " .30

(American Hemp)

Polished Hemp	.36¾ " .42
Unpolished	.29¾ " .34

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—			
New White No. 1	.11	to	.12
New White No. 2	nominal		
Light Silesias	.07½	"	.08
Black Silesias, soft	.06½	"	.07
New Unbleached	.10½	"	.11¼
Washable Prints	.06½	"	.07
Washable No. 1	.05	"	.05½
Blue Overall	.07½	"	.08
Cottons—According to grades—			
Washable Shredding	.03½	"	.04
Fancy Percales	.06¾	"	.07¼
New Black Soft	nominal		
Khaki Cuttings—			
Unbleachable Cotton Cuttings	.06	"	.06½
Bleachable Cotton Cuttings	.07	"	.07½
Men's Corduroy	.05½	"	.06
Ladies' Corduroy	.05	"	.05½
Cottonades	.05½	"	.06

Domestic Rags (Old)

(F.O.B. Eastern Shipping Point)

White No. 1—Repacked	4.50	to	5.00
Mixed White	4.00	"	4.25
White No. 2—Repacked	3.50	"	3.75
Thirds and Blues—			
Miscellaneous	2.25	"	2.50
Repacked	2.75	"	3.00
Roofing Stock—			
Foreign No. 1	nominal		
Domestic No. 1	1.85	"	1.90
Domestic No. 2	1.75	"	1.80
Roofing Bagging	1.65	"	1.70
Old Manila Rope	6.25	"	6.50

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1—			
Foreign	nominal		
Domestic	4.75	to	5.25
No. 1 Clean Bright—			
Sisal Strings	.04½	"	.05
No. 2 Clean Bright—			
Sisal Strings	.03½	"	.04
Sisal Jute	.02¾	"	.03
Scrap—			
No. 1	5.00	"	5.50
No. 2	2.50	"	3.00

Wool Tares, heavy	4.75	"	5.00
New Burlap Cuttings	6.00	"	6.50

Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	to	$115.00
No. 1 Hard White Shavings, unruled	100.00	"	—
Soft White Shavings, one cut	90.00	"	95.00
White Blank News	70.00	"	75.00
Soft White Shavings	80.00	"	—
No. 1 White Ledger	85.00	"	90.00
Ledger, Colored	70.00	"	72.00
No. 1 Heavy Books & Magazines	24.00	"	26.00
Overissue Magazines	nominal		
New Manila Envelope Cuttings	80.00	"	—
No. 1 Assorted Old Kraft	60.00	"	65.00
No. 1 Mixed Paper	11.00	"	12.00
Box Board Cuttings	10.00	"	11.00
Kraft Corrugated Cuttings	90.00	"	100.00
Old Corrugated	24.00	"	26.00
Overissue News	20.00	"	22.00
No. 1 News	13.00	"	15.00

BOSTON

Old Papers

(F.o.b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled	6.25	to	6.75
No. 1 Hard White Shavings, ruled	6.00	"	6.50
Soft White Shavings, Misc.	5.25	"	5.50
No. 1 Fly Leaf Shavings	1.75	"	1.85
No. 2 Fly Leaf Shavings	1.65	"	1.75
No. 1 Groundwood Fly Leaf Shavings	1.75	"	2.00
No. 2 Groundwood Fly Leaf Shavings	1.50	"	1.75
Mixed Colored Shavings	2.00	"	2.25
New Manila Envelope Cuts, one cut	4.50	"	4.75
Hard White Envelope Cuts, one cut	6.00	"	6.50
Triple Sorted No. 1 Brown Soft Kraft	3.75	"	4.00
Mixed Kraft Env. & Bag Cuttings	4.00	"	4.25
Kraft Envelope Cuttings	3.75	"	4.00
No. 1 Heavy Books & Magazines	1.25	"	1.75
New Manila Envelope Cuts, one cut	—	"	—
New Manila Envelope Cuttings	4.00	"	4.25
White and Colored Tabulating Cards	4.00	"	4.50
Groundwood Tabulating Cards	1.50	"	1.75
White Blank News	2.25	"	2.50
No. 1 Assorted Old Kraft	3.50	"	—
No. 1 Mixed Paper	.65	"	.75
Overissue News	1.00	"	1.25
Box Board Cuttings	.60	"	.70
New Corrugated Cuttings, Kraft	2.75	"	3.00
Old Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.10	"	1.25
Jute Corrugated Cuttings	1.07½	"	—
Paper Strings	2.00	"	2.25

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	—	to	4.75
Domestic	—	"	4.75
Sisal Rope No. 1	6.00	"	—
Sisal Rope No. 2	5.50	"	—
Mixed Rope	5.25	"	—
Mixed Strings	2.00	"	2.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.25	"	—
Soft Jute Rope	5.00	"	5.25
Jute Carpet Threads	6.00	"	—
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	—	"	4.75
Domestic	—	"	4.87½
South America	5.25	"	—
Wool Tares—			
Foreign	4.75	"	—
Domestic	4.75	"	—
Aust. Wool Pouches	5.00	"	5.25
New Zealand Wool Pouches	5.25	"	5.50
New Burlap Cuttings	6.00	"	6.50
Heavy Baling Bagging	5.25	"	5.75
Paper Mill Bagging	3.50	"	3.75
No. 1 Roofing Bagging	1.75	"	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.08	to	—
Fancy Percales	.07½	"	.08
New White No. 1	.11	"	.11½
New Light Flannelettes	.08	"	.08½
Canton Flannels, Bleached	.10	"	.11
Underwear Cutters, Bleached	.10	"	.11
Underwear Cutters, Unbleached	.11	"	.12
Silesias No. 1	.08	"	.08½
New Black Silesias	.05	"	—
Red Cotton Cuttings	.05	"	—
Blue Overalls	.08½	"	.09
Soft Unbleached	.11	"	.12
Blue Cheviots	.08½	"	.09
Fancy	.06	"	—
Washable	.06	"	—
Khaki Cuttings	.06½	"	.07½
Corduroy	.03½	"	—
Khaki Canvas	.06¼	"	.06¾
B. V. D. Cuttings	.10½	"	.11¼

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	to	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	2.00	"	—
No. 2	1.75	"	2.00
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	6.00	"	—

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	$110.00	to	$120.00
No. 1 Hard White Shavings, unruled	105.00	"	115.00
No. 1 Soft White Shavings	80.00	"	95.00
No. 1 White Ledger	55.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	43.00
White Blank News	65.00	"	—
Mixed Kraft Env. & Bag Cuttings	75.00	"	85.00
No. 1 Assorted Old Kraft	45.00	"	55.00
Overissue News	28.00	"	—
No. 1 News	17.00	"	19.00
No. 1 Mixed Paper	13.00	"	14.00
Old Corrugated	20.00	"	—
Mill Wrappers	22.00	"	—

MARKETS

BLANC FIXE — Prices unchanged. Demand strong. Pulp is currently quoted at $85 in bags, car lots at works, 6 cents per lb., l.c.l., deld.; by-product $72.50 per ton, car lots at works, 6 cents per lb., l.c.l., deld.

BLEACHING POWDER—Market unchanged. Active demand. Shortage of metal containers. Prices range from $3.75 to $4 per 100 pound drums, l.c.l., works.

CASEIN—Market strong following price rise. Buying weak. Domestic production unsettled. Stocks inadequate. Current prices on processed acid precipitated casein at 33 to 35 cents per pound for domestic grades and 30 to 32½ cents for imported grades, f.o.b. shipping point.

CAUSTIC SODA—Supply tight with no visible sign of improved supply. Solid caustic is reported at $2.85 per cwt.; flaked and ground is quoted at $3.25 per cwt. in 400 pound drums, $3.75 per cwt. in 100 pound drums—car lots at works; liquid 50% in tank cars at $2.25 per cwt.; liquid 73% in tank cars at $2.35 per cwt. at works.

CHINA CLAY — Market steady. Domestic grades in good supply; filled, $10 to $13 per ton, car lots; coating clay is $15 to $30. Imported clay demand good. Supply improved. Quoted $16 to $35 short ton export warehouse.

CHLORINE—Supply condition unimproved. Tank car shortage hampering movement. Demand sustained. Prices unchanged. Currently quoted at $2.25 per cwt. in single unit tank cars, and at $2.55 to $3.75 per cwt. in multi-unit tank cars, f.o.b. works.

ROSIN—Trading light. Prices firm. Gum rosin in drums per 100 pounds net in yard, New York car lots B, D, $9.75; E, F, $10.50; G, H, I, K, M, N, $10.75; WG, $11; WW, $11.10. Wood rosin, per 100 pounds, net, f.o.b., l.c.l., N.Y., B, $6.45; FF, $7.95; G, H, I, K, M, $10.30; N, $10.46; WG, $10.86; WW, $10.95; X, $10.96.

SALT CAKE—Demand continues ahead of supply with slight improvement in shipments. Prices unchanged. Domestic salt cake is quoted at $20 to $26.

SODA ASH — Demand increased. Market tight. No early improvement in supply seen. Shipments only against contracts. Current prices, car lots, per 100 pounds, are as follows: in bulk, $1.10; in paper bags, $1.30; and in barrels, $1.80.

SODIUM BICARBONATE — Supply approximately abreast the demand. Shortage of box cars delays shipment. Reported as $1.85 per cwt. paper bags, carload lots.

STARCH—Prices strong and unchanged. Market active both domestic and export. Production behind schedule; sold well ahead. Pearl grade quoted at $7.02 per 100 pounds, powdered starch at $7.13 per 100 pounds, car lots, New York.

SULPHATE OF ALUMINA — Supply steady. Prices unchanged. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is quoted at $2 per 100 pounds in bags, car lots, at works.

SULPHUR—Prices unchanged. Supplies ample. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf ports is $17.50 to $19.50 per long ton.

TALC—No change in domestic market. Demand far in excess of supply. Domestic grades are currently quoted at $21 per ton in mines; Canadian at $35 and up per ton. All prices in car lots.

TITANIUM DIOXIDE — Extremely tight supply with no early easing seen. Demand strong. New prices Jan. 1: anastase 17½c lb. carload lots, 18-18½c l.c.l.; rutile 19½c lb. carload lots, 20-20½c l.c.l.; 50-lb. bags, f.o.b. plant, minimum freight allowance.

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McCabe Plan Calls Halt on Inflation

(Continued from page 7)

rected at the basic fundamental causes of inflation and not its effects. Therefore, we should concentrate on:

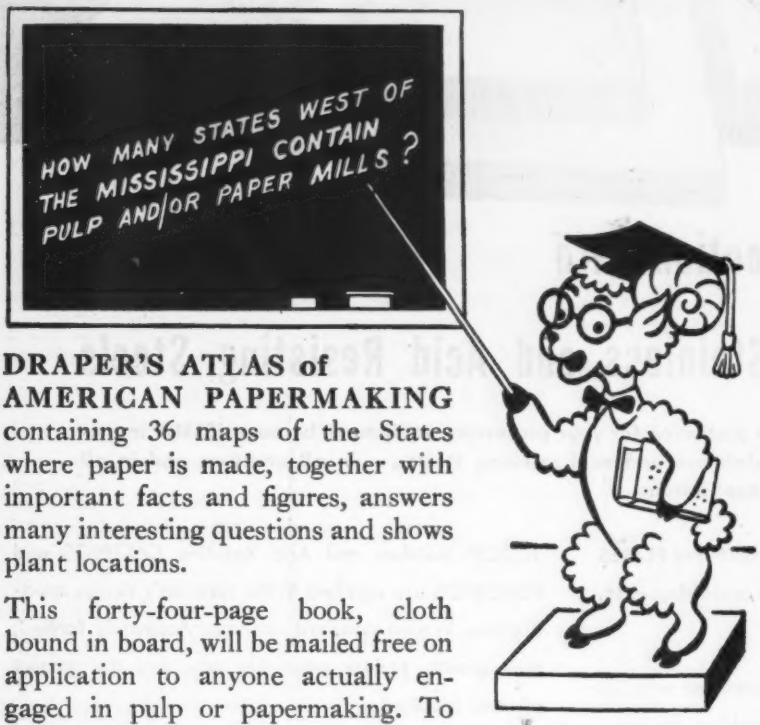
Immediately reducing the swollen supply of money and credit, by increasing the Federal Reserve rediscount rate and seeking Congressional enactment to raise reserve requirements for member banks; and drastically curbing the activities of the many governmental agencies authorized to extend or guarantee credits.

Substantially reducing the public debt, preferably by reducing expenditures. In a period of inflation, tax reductions should not precede, but should follow reductions of the public debt.

Vigorously promoting the campaign to conserve food in order to bring down prices. Food is almost one-half of the working man's budget and any reduction in food prices will have a decisive effect on wage increase demands.

Intensifying the educational program calling for our citizens to buy savings bonds instead of luxuries and gadgets. The leverage here for reducing present prices is tremendous, and the dollars tucked away in savings bonds will go further when prices come down."

What do you know about Paper?



DRAPER'S ATLAS of AMERICAN PAPERMAKING containing 36 maps of the States where paper is made, together with important facts and figures, answers many interesting questions and shows plant locations.

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Answer to Question No. 2 — In ten states West of the Mississippi

South Africa Reports Newsprint Still Short

WASHINGTON—Paper dealers in the Union of South Africa have advised American representatives in that country that they expect a marked decrease in paper supplies in early 1948, it is reported here.

While a decline late in 1947 in paper imports from Sweden was offset by increased supplies from the United Kingdom, it was thought that any shortage early in the new year might afford an opening for U. S. exporters to increase their sales.

However, supplies of most types of paper, except newsprint and kraft liner paper used in manufacture of corrugated boxes, were in free supply in mid-Fall, when the survey was made, and this situation was expected to continue until the end of the year. More recent advices have not been reported yet.

Bemis Names Highley New York Sales Head

NEW YORK—Robert Highley has been appointed manager of the New York General Sales Division of the Bemis Bro. Bag Company. Mr. Highley joined Bemis in 1916 as a member of the Boston Jute Department. He remained there, except for two years military service during World War I, until 1924 when he transferred to the Bemis New York office with burlap purchasing as his primary duty. He became a member of the New York General Sales Division at the beginning of 1944, and for a time prior to his formal appointment had been acting manager there.

Everest is Named to Small Business Unit

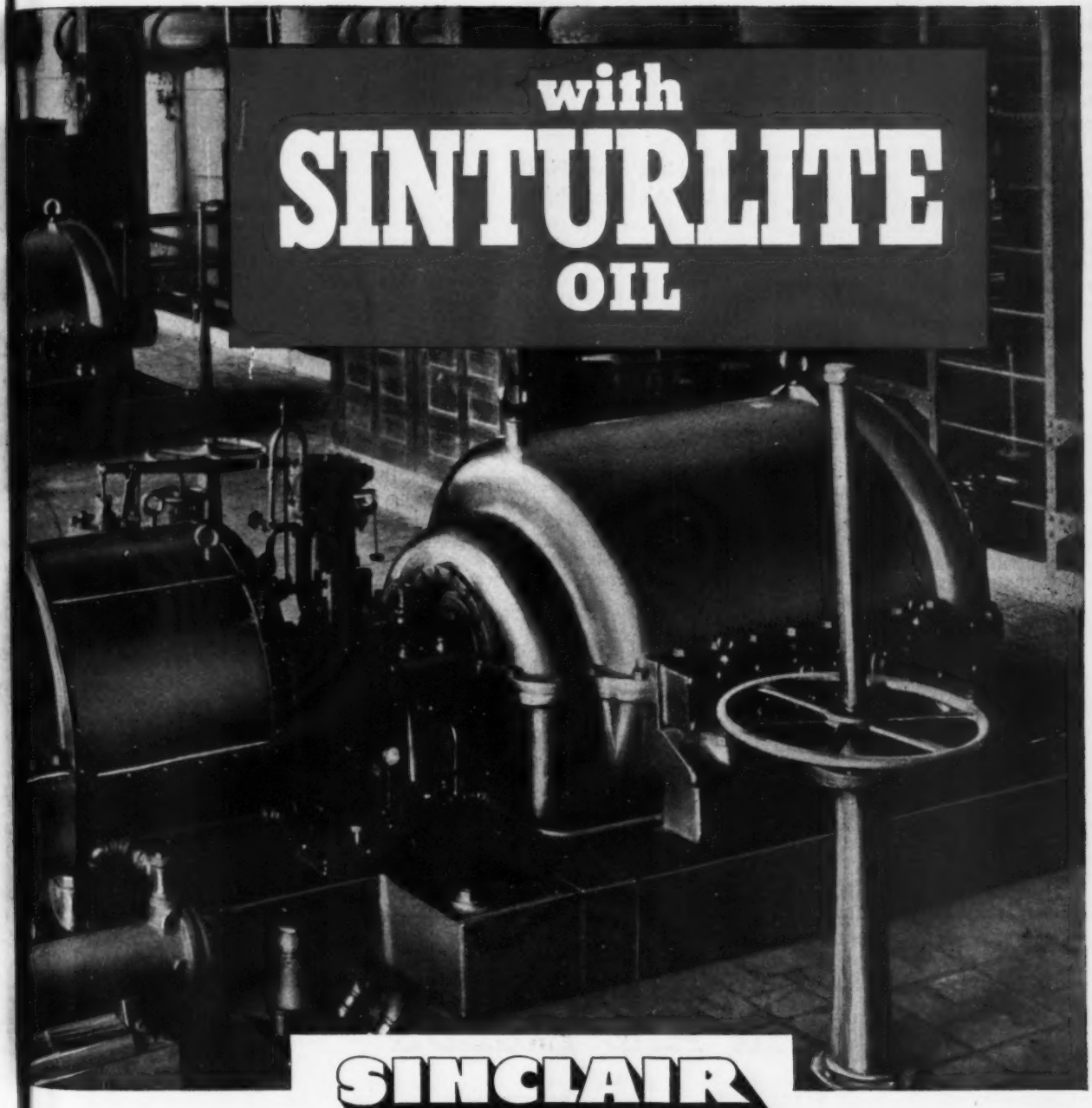
(Continued from page 7)

for several years. It was supported by Wisconsin Senators Wiley and McCarthy and Cong. Reid Murray of this district.

The committee for the treasury department will meet in Washington next month, with Secretary of the Treasury Snyder and Under-Secretary A. L. M. Wiggins, who will be the liaison officer to confer with the committee on how best the treasury department may be of service to small business and how the committee may cooperate with the department.

This committee is to take up among other subjects, such questions as tax reduction, tax exemption of cooperative organizations, "nuisance" and other excise taxes, "community property" taxes, income tax relief for small businesses, superfluous government bureaus and establishments and general economy and efficiency in government and related matters with recommendations to the secretary of the treasury, and legislative action by congress if that is desirable.

..and STAY RIGHT



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Oil Float Chamber Method for Evaluating Grease Resistance

By DR. AUGUST NOLL

Translated from Wochenblatt fur Papier Nov. 1, 1947

An apparatus similar to the water float chamber has been designed for use in testing the grease resistance of paper and paper products. The principle of a chamber covered with a sheet of the test paper, floating on a liquid is the same in both instances. The testing reagent is di-ethyl Phthalate used in conjunction with a dry indicator which fluoresces under an ultra-violet light. The vehicle used to carry the dry indicator must be of such nature that it will not interfere with the fluorescence of the indicator. The following vehicles proved to be most suitable: Borneol, Mercaptobenzothiazole and p-Toluolsulphamid. After considerable experimental work a combination of p-Toluolsulphamid with 1 percent of a specially purified Rhodamine B was selected.

The indicator is prepared as follows: 10 grams of Rhodamine B are placed in an Erlenmeyer flask with 100 ml. of 95 percent Ethyl alcohol and heated gently to dissolve the dyestuff. The solution is settled and then decanted into a fluted filter paper. The residue is extracted several times and the filtrate is then evaporated to dryness. The dried material is then pulverized and 0.1 gram of the substance is mixed with 10 grams of p-Toloulsulphamid and stored in a light-proof stoppered bottle.

The oil float chamber consists of a funnel-shaped aluminum vessel, the bottom of which is equipped with a ring and cap nut for fastening the test sheet over the opening.

In making the test, a coating of the prepared indicator mixture is applied by means of a soft brush to the surface of the test sheet which has been previously clamped to the test vessel. The vessel is then placed in another glass vat containing the Diethyl Phthalate. A stop watch is started at the moment that the test sheet makes contact with the test liquid. The end point has been reached when several points of yellow fluorescence appear under exposure to ultra violet light. If the end point has not been reached within one hour after starting the test, that paper is considered grease-proof.

Memphis Kleenex Plant To Use Alabama Pulp

MEMPHIS—Officials of the Kimberly-Clark Corporation have predicted that pulp from Southern woods probably will supplant Northern pulp in manufacture of Kleenex at the new Memphis plant of the company within the next three years.

Pulp output of the Coosa River Pulp and Paper Company's plant at Childersburg, Ala., will be used at Memphis when the plant is completed. Construction of the plant, a subsidiary of the Kimberly-Clark operations, will begin next month. Plans for "integrated operation" of the Childersburg and Memphis plants are under way, and prospects are that forest lands of the Alabama section adjacent to the former will provide sufficient pulpwood under present forest management policies to make this possible.

H. G. Boon of Neenah, Wis., vice-president in charge of operations, is supervising operation of the Memphis plant, which began production last month and will reach its capacity output by the middle of the year.

Thompson to Talk at Kalamazoo

KALAMAZOO, Mich. — Dr. William Thompson, consulting psychologist, is scheduled to talk before the Michigan Division of the Superintendents Association at its February 19 meeting. His subject, Psychology in Industrial Relations.

Towne is Awarded Holyoke Plaque

HOLYOKE, Mass.—Joseph M. Towne, president of the National Blank Book Company, and active participant in a long list of enterprises that have to do with the building of a better Holyoke, is the 1947 recipient of the William G. Dwight Distinguished Service to Holyoke plaque. The presentation of the plaque took place at a dinner at the Roger Smith hotel, when Mr. Towne became the eighth recipient of the award.

Mr. Towne is a native of East Orange, N. J. He was educated in the schools of that town, the Stevens Preparatory School at Hoboken, and was graduated with a degree in mechanical engineering from Stevens Institute in 1897. After three years as architectural engineer with a leading New York firm he became associated with the Safety Car Heating and Lighting Company, at New York, and held that association for 12 years before coming to Holyoke to take charge of the development of the loose leaf department at the National, with which his father and brothers had been associated since 1887.

Sweden Cuts Back Its Paper Consumption

WASHINGTON—Cut-back of Swedish paper consumption to the average for 1944-45 in an effort to free larger supplies for export to hard-currency markets abroad, is reported by American sources in Sweden to this government.

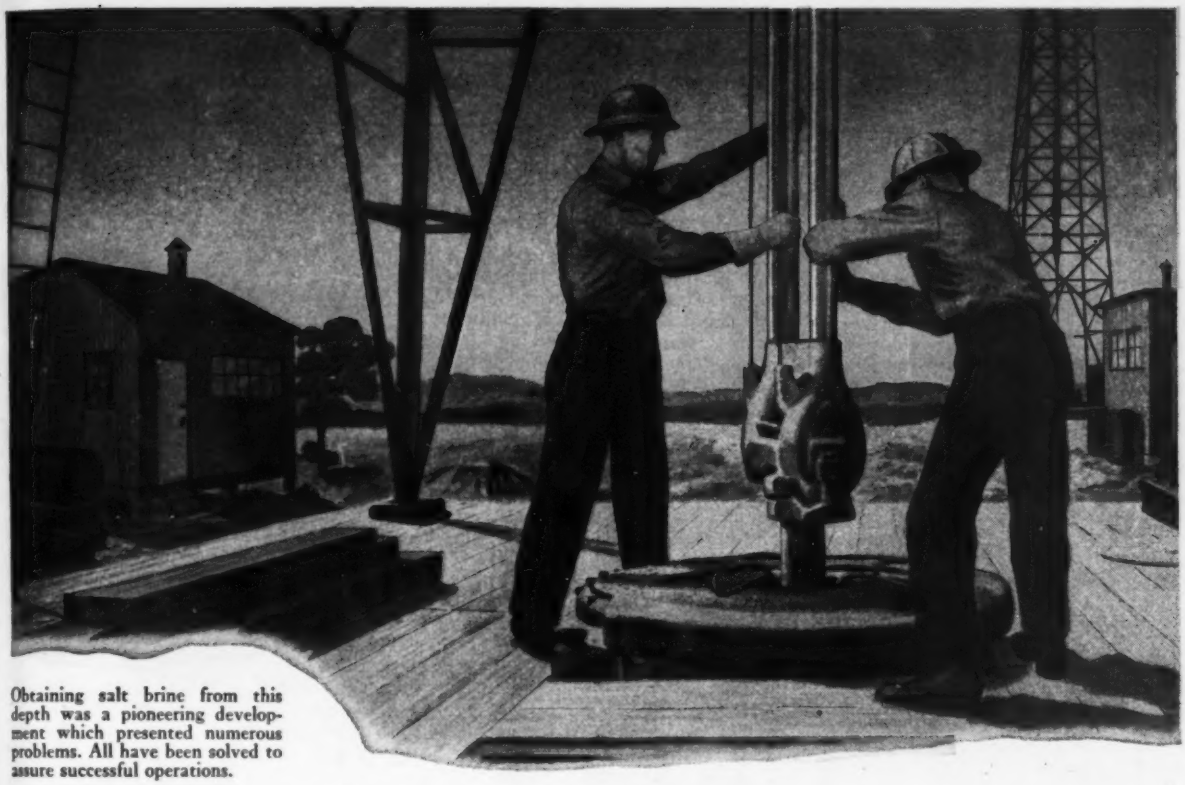
Sweden's domestic consumption of paper has risen steadily from about 205,000 metric tons in 1935 to 530,000 in 1946, it is reported. The cut-back would reduce domestic consumption to between 430,000 and 500,000 metric tons.

The restriction applies chiefly to newsprint, magazine paper, wrapping paper and wallpaper, it is reported. The goal is to increase paper exports to hard-currency countries in an effort to obtain badly-needed foreign exchange for essential imorts, it is said.

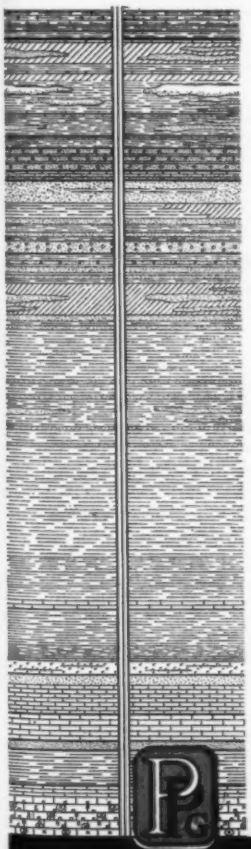
MEISEL MACHINERY IS HELPING IN ALL FIELDS

Cigarette	Wax	Photographic	Jet Propulsion
Condenser	Grease Proof	Snap-out Forms	Aero-engine Parts

MEISEL PRESS MFG. CO. 950 Dorchester Ave., Boston



Obtaining salt brine from this depth was a pioneering development which presented numerous problems. All have been solved to assure successful operations.



Chlorine and Caustic Soda

from the world's deepest salt wells

The deepest salt bed in commercial use—6,800 feet below the earth's surface—provides the brine used at Columbia's electrolytic chlorine-caustic soda plant at Natrium, West Virginia. Hot water, pumped down to this great stratum, dissolves the rock salt and forces the brine to the surface.

The favorable location of the Natrium plant was established as a result of pre-Pearl Harbor studies by Columbia. Built and operated for the DPC, its post-war purchase by Columbia assured continued operation so helpful in meeting the urgent needs of industry for caustic and chlorine. The caustic soda is purified by a patented Columbia process to meet exacting uses such as required in the manufacture of rayon.

Pittsburgh Plate Glass Company, Columbia Chemical Division, Pittsburgh 13, Pa. District Offices: Chicago, Boston, St. Louis, Pittsburgh, New York, Cincinnati, Cleveland, Minneapolis, Philadelphia, Charlotte, San Francisco.

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PITTSBURGH PLATE GLASS COMPANY

EQUIPMENT AND SUPPLY NEWS

Precise Streamlines Rotogravure Press

Rotogravure is regarded by many authorities as the coming economical printing method of this modern age and of the future, for its characteristics of uniformity of color, high speed with multiple colors and a minimum of register adjustments. To fill the need for a sturdy, high production Rotogravure Printing Press, the Precise Engineering Company of Chicago has designed and built a press that is simplicity itself. It has all the essentials, as the name indicates, for high precision operation and printing results, but it is stripped of all complicated gadgets.

The illustration testifies to the rugged construction and simplicity of design of this press, yet speeds up to five hundred feet per minute can be maintained with perfect register on jobs up to five colors. The press of normal design is made to print from a roll and rewind to a roll. However, to meet varied requirements, the press can be supplied with embossing, slitting, sheeting, folding, or rotary die-cutting units. Any, or all of these attachments are available and can be used or by-passed, as desired. A special printing head can be added for applying plastics, hot melt coatings, waxes or resins. For heavy coatings, a knife type coating head can be installed.

With today's rapidly drying inks and coating liquids, almost any combination of printing in solid colors and half-tones and coating is possible in a continuous operation at great saving in time, materials and labor. The product of this press, in whatever form it is delivered, is ready for immediate use or further conversion.

Motorized rams insure automatic and correct printing cylinder pressures. Register is first obtained by easily adjustable cylinder rotation. Final register is procured and maintained by means of web tension rolls for each printing head. Engraved cylinders of varied diameters, covering a wide range, can be interchanged on this press with little effort, thus greatly enhancing its flexibility.

If electronic equipment for web and register control is desired, it can be supplied as can high efficiency drying equipment for gas, steam, or infra red lamps. This press can be used to print all types of paper, such as glassine, tissue, newsprint or high grade, as well as carton board, foil, cellophane or acetate films. All types of rotogravure inks and plastic coatings can be readily used.

This press is designed to prove invaluable to manufacturers of food containers, box makers, cover paper manufacturers and printers, who have long run printing orders. It can be supplied in any width to meet the customer's requirements and delivery can be made in ninety days from receipt of order.

Gerin Markets New Laboratory Centrifuge

RED BANK, N. J. — A heavy duty hand power centrifuge designed to swing two or four 100-cc tubes with minimum effort has been produced by the Gerin Corporation.

The outer diameter of swing is 16 inches and there is a stationary guard bowl to reduce air resistance and protect the operator from whirling parts. Unusual features include ball bearings throughout, and a 24-to-1 gear ratio, permitting reduced crank speed. The entire unit can be stowed in the bowl when not in use.

This centrifuge is ideal for many tests in plants which are processing or using petroleum products, foods, paints, pharmaceuticals, and for general laboratory uses involving precipitation, sedimentation, or extractions.

Sulphonated Estols Are Offered for Economy

BOONTON, N. J. — Commercial production of a new series of sulphonated fatty esters from vegetable sources is announced by E. F. Drew & Co., Inc. The new materials are known as Sulphonated Estols. A unique combination of oil refining, distillation, hydrogenation and chemical processing makes available sulphonation products free from mineral oil, resinous substances, or proteinaceous and pectic impurities.

Sulphonated Estols have excellent color and odor properties, and are exceptionally free from development of odor and color upon aging.

Barnes & Reinecke Describe Product & Industrial Design

CHICAGO—In a four-page multi-color brochure Design Increases Sales, Barnes and Reinecke, Inc., 230 East Ohio, depict representative examples of their fourteen-year-old industrial design service for product and package design and engineering.

YOU NEED MORE THAN THIS ☐ TO CAST LONG SERVICE ROLLS

Specialized equipment is only part of what it takes to give you rolls that provide maximum paper-making service. The other *vital* factor is *experience.*

Farrel has accumulated this experience over almost a century of roll making. From this has come the skill and knowledge needed to give every calender roll a clear, hard, chilled surface, *with the skin of sufficient depth to provide maximum wear but not so deep as to detract from the strength of the roll.*

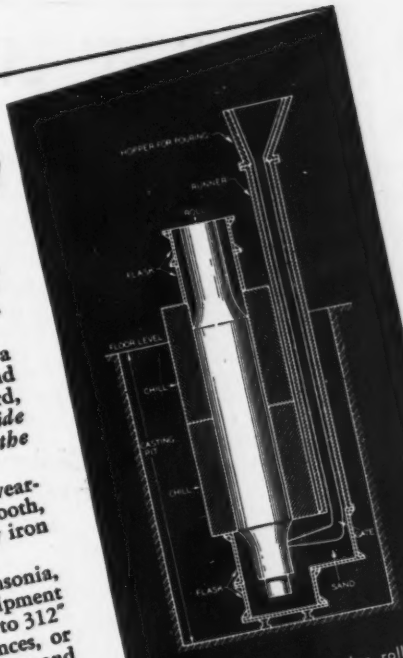
This chilled skin provides an extremely hard, wear-resistant surface capable of taking and holding a smooth, mirror-like finish. The roll strength lies in the gray iron structure below the chill.

In *America's largest specialty roll shop* at Ansonia, Farrel has the experienced skill and specialized equipment to produce rolls from 5" to 72" in diameter and up to 312" face, ground round and straight to close tolerances, or crowned with the correct shape for specific purposes and operating conditions.

You can get full information on rolls for any purpose, complete calender stacks, roll grinders and roll calipers, promptly, on request.

FARREL-BIRMINGHAM COMPANY, INC.
ANSONIA, CONNECTICUT

Plants: Ansonia and Derby, Conn., Buffalo, N. Y.
Sales Offices: Ansonia, Buffalo, New York, Boston, Pittsburgh, Akron, Chicago, Tulsa, Houston, Los Angeles.



The body of a calender roll is formed by pouring molten metal into an iron mold or chill. Iron being a good conductor of heat, cooling is rapid, causing the surface of the roll body to "chill" and harden. The body of the roll below the chilled surface cools slowly, forming a gray iron structure which gives strength to the roll. Sand molds are used for the necks, and since sand is a poor conductor of heat, the metal becomes a gray-iron composition, with physical properties which make the necks strong, yet readily machinable.

FARREL PAPER MILL MACHINERY

ROLLS: Chilled Iron, Dry Sand, Meehanite, Alloy Iron, Steel, Chromium Plated

FOR: Calender Stacks, Board Calenders, Super Calenders, Glassine Calenders, Friction Rolls, Breaker Rolls, Smoothing Rolls, Coating Rolls, Creping Rolls, Plater Rolls, Cutting Rolls, Paraffining and Waxing Rolls, Saturating Rolls, Silicating Rolls, Miscellaneous Special Purposes

CALENDERS: Paper and Board
GRINDING MACHINES: Roll
CALIPERS: Roll
GEARS, CUT: Spur, Single and Double Helical (Farrel-Sykes Continuous Tooth Type)
SPEED REDUCING GEAR UNITS
SPEED INCREASING GEAR UNITS
FLEXIBLE COUPLINGS

Farrel-Birmingham

FB-397

NEW LITERATURE

Esterline-Angus Bulletins Operation Recorders

INDIANAPOLIS — *The Graphic* Bulletin 247 entitled Operation Recorders, Their Selection and Use, describes the construction, operation and applications of Esterline-Angus Company's Operation Recorder by means of factual and straight-forward descriptions, cuts, installation diagrams and sketches. Page 16 is devoted to the versatility and wide range of application of this unique time-measuring instrument. Mail address is The Esterline-Angus Company, Inc., P. O. Box 596, Indianapolis 6, Ind.

Norton Booklet Studies Ground Surface Injury

A new booklet, published by Norton Company, is the most up-to-date and complete treatment available of the subject "Injury in Ground Surfaces." Dr. L. P. Tarasov of the Norton Research Laboratories is the author.

This booklet features many photographs which show clearly the numerous types of defects, such as cracks and burn, that are sometimes found in ground surfaces. Above all, it is written for people concerned with the practical aspects of grinding. Makers of tool steel, tools, dies, and hardened steel parts, are finding the information contained in the booklet to be directly helpful in their everyday work.

In addition, this publication should appeal to metallurgists having to deal with these problems since it presents in detail the latest information on the detection of injury and how to proceed in trouble shooting.

Allis-Chalmers Bulletins Nordyke Elevators

Fast, dependable inter-floor transportation with the Nordyke service elevator for a variety of industries is described in a new bulletin released by the Allis-Chalmers Mfg. Co., Milwaukee, Wis.

The elevator, simple in design and of heavy-duty construction, can be used in any building up to 200 feet high. Uses to which the elevator is being put in flour and feed mills, paper plants, warehouses, filtration and power plants, lumber mills and garages are portrayed in the bulletin.

Nordyke elevators require less installation space than a stairway or ordinary service elevator, and cost of continuous operation per 24-hour day varies between 20 and 50 cents depending on the total height of the unit, according to the bulletin.

The elevators are designed to meet known safety codes. Diagrams showing safety measures to be considered in connection with each installation are included in the bulletin, which suggests that state safety codes be checked for specific requirements.

Folding Machine Paste Bulletin Available

Paisley Products, Inc., Chicago and New York City, announces a new Technical Service Bulletin, No. 20, describing improved folding machine pastes for paste binding of small pamphlets, magazines and similar publications.

It is claimed the use of these pastes eliminates saddle stitching and separate trimming operations, as pamphlets of 8, 12 or 16 pages can be folded, pasted and trimmed in one operation and packed for shipment direct from the discharge end of the machine.

Full instructions for use are also given and a complete price list shows available packings.

The new folding machine pastes augment the already complete line of Paisley Printers Adhesive items, which now includes Pliatab Cold Padding Glue, Printers Make-Ready Paste, No-Offset Spray Solutions, Mailing Pastes, Newspaper Splicing Pastes, Flexible and Non-Warp Animal Cake Form Glues, Hot Padding Compounds, Carbon Interleaved Form Glue, Greeting Card Mounting Pastes and other bindery adhesives.

Brown Expands Activities In Rocky Mountain Area

DENVER — Effective January 1, the Brown Instrument Company expanded its sales and service activities in the Rocky Mountain area by establishing permanent sales and service representation at 400 Broadway, Denver, and 437 Atlas Building, Salt Lake City, Utah.

Donald Larcen has been placed in charge of Denver industrial sales and George Winslow, formerly industrial service manager at Detroit, will handle similar duties in Salt Lake City, where he will work with Eldon Richardson, district manager.

The areas to be covered by the Denver branch will include all Colorado, Wyoming and Western Nebraska. The Salt Lake City district will cover all of Utah, Southern Idaho and Western Nevada.

New!

BECKMAN pH METER

★ **for operation directly from 50 or 60 cycle, 110-volt A.C. line!**

Model H

A rugged, self-contained, direct reading pH Meter. Used for pH measurements, acid-alkali titrations, etc. Proven accuracy and dependability.

With built-in temperature compensator, adjustable continuously over the range 0 to 100° C. Shielded glass electrode and companion calomel electrode. Plugs directly into 110-volt, 60 cycle or 50 cycle electric line. Costs but $180. complete.

Write for bulletin PT1 for further details.

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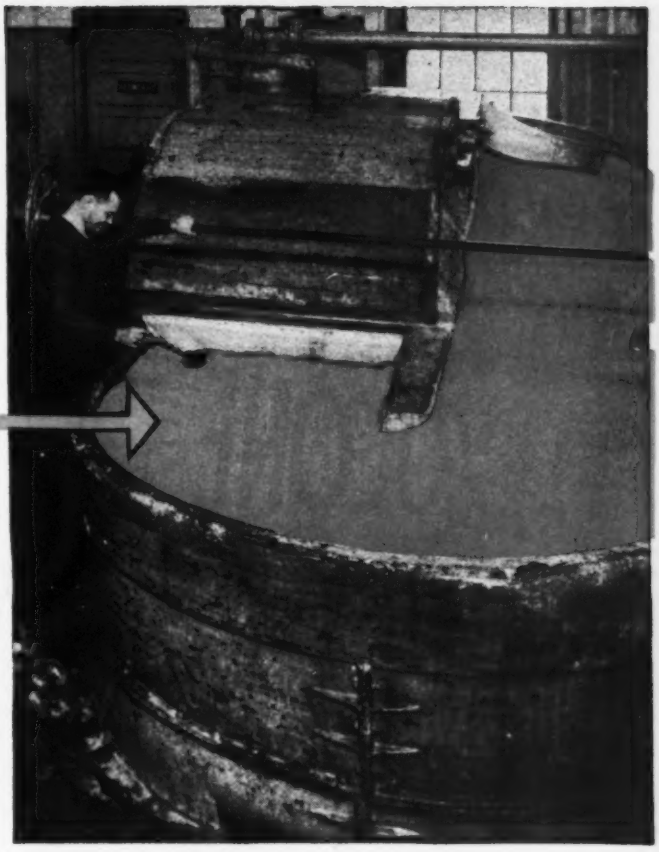
OUTSTANDING
COLOR
for
PAPER



Du Pont MOLYBDATE ORANGE YE-428-D

Here's a versatile pigment that's a "MUST" for your colored paper. Du Pont Molybdate Orange YE-428-D has the desired characteristics of exceptional covering power, excellent strength and superior brilliance. It's a color which blends well with either yellow or red—to give truly distinctive tones.

Molybdate Orange YE-428-D is standardized for both beater and coated paper uses. It can be used in flinting and frictioning—wets readily with water—mixes well with casein and other sizes—won't bleed in water. And it's best for economy—compared to either organic orange pigments or regular chrome orange pigments.

Try Du Pont Molybdate Orange YE-428-D on your next coloring job—whether it is fancy printed paper, coated paper or twisting paper. Ask your Du Pont salesman for details or write E. I. du Pont de Nemours & Co. (Inc.), Pigments Department, 1007 Market Street, Wilmington 98, Del

Tune in to Du Pont "Cavalcade of America," Monday nights—9 p.m. E

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Lower the Belt Cost per Ton of Paper produced, with

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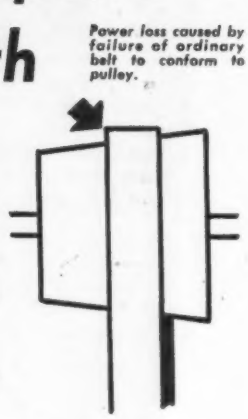


Power loss caused by failure of ordinary belt to conform to pulley.

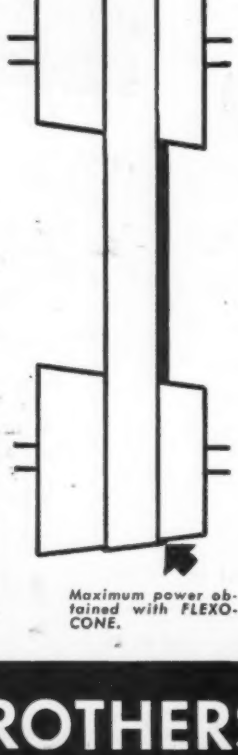
3-PLY LEATHER BELT

scientifically constructed for cone-pulley drives, where the greatest stress on the belt is in a diagonal rather than a straight line.

Sometimes even good belts of ordinary construction cannot stand up under this excessive stress and belt life is greatly shortened.

FLEXOCONE is specifically designed and constructed to meet and overcome these conditions which are always present on a cone-pulley drive.

★ Experienced Alexander engineers will gladly specify FLEXOCONE belts to meet the particular conditions of your drives. Send for specification sheets.



Maximum power obtained with FLEXOCONE.

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Rust Completes $50 Million Construction in 1947

PITTSBURGH, Pa.—Completion of design and construction of industrial plants and facilities valued in excess of $50 million was reported for 1947 by The Rust Engineering Company, in a year-end summary of its work. Contracts now on the books indicate a continued substantial volume through 1948, company officials said.

The past year saw the company active in most major industrial fields. Power and steam plants were begun for Jones and Laughlin Steel Corp. at Pittsburgh, and for John A. Roebling's Sons Co. at Roebling, N. J. Installation of process equipment for synthetic drug and dye production was initiated for Calco Chemical Division, American Cyanamid Co. at Willow Island, W. Va.

Large expansions are under way in the paper mill field, including projects for Container Corporation of America at Fernandina, Fla.; for Hollingsworth and Whitney Company at Winslow, Me., and Mobile, Ala.; for West Virginia Pulp and Paper Company at Covington, Va.; and for Celotex Corporation at Marrero, La. An extensive expansion, including a new 200-ton-a-day kraft mill, was virtually completed during the year for Brown Company at Berlin, N. H., and a new bag plant was finished for Arkell and Smiths at Mobile, Ala.

As a result of its steadily expanding activities in chemical processing fields, the company late in the year announced formation of a new chemical process engineering division to serve the petroleum, petro-chemical, and other chemical industries. Activities of the new division enable the organization to undertake entire projects including process design and construction of such plants.

Hooker Names Bjarne Klaussen Production Vice-President

NIAGARA FALLS, N. Y. — Bjarne Klaussen has been promoted to be vice-president in charge of production of the Hooker Electrochemical Company. A graduate of the University of Oslo, Norway, he became a member of the Hooker organization on November 8, 1916.

He has long been recognized as an industrial leader. He also has always found time to take an active part in civic affairs. He has been a member of the board of directors of the Community Chest and was general chairman of the recently successful Community Chest campaign.

Klaussen is also a member, and past director, of the Niagara Falls Rotary Club, an active participant in Chamber of Commerce activities, a member of both the Niagara Club and Niagara Falls Country Club, and member and past commodore of the Youngstown Yacht Club. He lives in Lewiston.

Experts Tell Story of Forest Valuation

Forest Valuation by Herman H. Chapman, Professor Emeritus, Yale University, and Walter H. Meyer, Harriman Professor of Forest Management, Yale School of Forestry, is a comprehensive volume of 521 pages, covering the economic and financial phases of Forest Management. It should prove extremely valuable as a supplementary text for courses in Forest Management and should be considered a necessity for the forestry departments of pulp mills, lumber companies, and other users of wood who foresee the necessity of growing trees as crop to assure a continuous supply of their wood requirements in the not too distant future.

Included among the 18 chapters are the following subjects: "Market Values of Forest Properties"; "Cost of Production versus Profit in Forest Enterprises"; "Forest Rent, Soil Rent, and Rotation"; "Forest Fire Insurance"; "Methods of Appraisal of Stumpage Values"; "The Appraisal of Forest Property to be Purchased for Future Operation."

Copies of the book may be obtained from McGraw-Hill Book Company, 330 West Forty-Second Street, New York 18, N. Y., at $6 per copy.

Neenah Adds Twenty To Old Timer List

NEENAH, Wis. — Twelve new members of the Old Timers club who have completed 20 years of service with Neenah Paper Company will be among members honored at the employes' Christmas banquet and party December 21 at Germania hall. The Old Timers club has nearly 150 employes who have 20 years or more of service. The member with the longest service record is Howard R. Larson, with 46 years. Next are Joe Beisenstein, 43 years of service, and Ernest Weinke, 41 years.

Past employes, now retired but considered honorary members, have received special invitations. They include William H. Owen, who had 59 years of active service before retiring; Charles Engel, 43 years; and Olaf Jurgsen and William Schultz, 41. The company has presented gold watches to all of the above-named. Its first banquet of this nature was in 1939.

Union Paper & Twine Names M. S. Dilts at Buffalo

BUFFALO, N. Y. — M. S. Dilts has been appointed manager of the Buffalo Division of the Union Paper & Twine Company, Inc., 104-108 Pearl St. He succeeds Harry W. Wright, who continues with the company in a sales capacity. Mr. Dilts has been associated with the paper industry since World War I. He is a member of the Buffalo Ad Club, Buffalo Athletic Club and the Transit Valley Country Club.

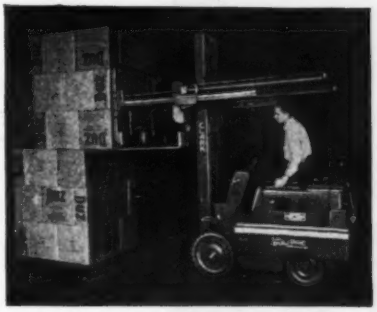
MATERIAL HANDLING News

Here is the one and only method of handling many types of unit loads that does not require conventional pallets or skids . . . practical to the Nth degree, and destined by its merits to be perpetually modern . . . offers unparalleled opportunities for big savings . . . a method made possible by Clark's revolutionary new handling tool—the PUL-PAC.

The PUL-PAC is a "push-pull" attachment **which enables a Clark fork truck to lift, carry and tier many types of material assembled in unit loads based on disposable or durable sheets of corrugated paper, fiber-board or similar inexpensive material.**

PULLS THE LOAD ONTO THE LOAD-PLATE

This unique device consists of a vertical sliding rack which travels horizontally above the truck's wide load-plates, with a gripper device at its base. To pick up a load, the rack is moved forward and the gripper opens automatically to receive the projecting edge of the load-base sheet. When the rack is retracted, powerful hydraulic pressure closes the gripper firmly upon the load-base sheet; the load then is pulled onto the load-plate. See picture No. 1. Lifting, tilting and lowering are done in the usual manner.



1. Pulling the Load Onto the Load-plate

2. Pushing the Load Off at Destination

PUSHES THE LOAD OFF AT DESTINATION

At destination, the operation is reversed. The "push" mechanism is used to hold the load over the desired area while the load-plate is removed.

TIERS UNIT LOADS SECURELY

With the PUL-PAC, maximum compactness can be achieved both in storage and in freight car and trailer shipments; this is an economic advantage of paramount importance.

The PUL-PAC has been tested for months in various installations and has proved highly successful in handling many kinds of packaged materials.

Full details on this remarkable new materials handling method and device may be obtained quickly by writing to the Clark Equipment Company, Tructractor Division.

CLARK GAS AND ELECTRIC POWERED FORK TRUCKS AND INDUSTRIAL TOWING TRACTORS

CLARK EQUIPMENT COMPANY, TRUCTRACTOR DIVISION, BATTLE CREEK 58, MICH.
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ATTENTION
PAPER MILLS

We invite contacts with mills seeking dependable and reliable sales service.

Make Great Atlantic in New York your Eastern Sales Headquarters.

DIGESTED

In order to exist at all, people have to have such things as potatoes, shoes, houses, tea kettles and tenpenny nails.

If they live apart each family has to provide these things for itself. But if they live together, in an organized society, one man can specialize in building houses for the community, another in making nails, a third in growing potatoes.

The moment this takes place, however, people face another very knotty problem: Who grows potatoes and who makes nails? And what does each get in return?

Consequently, as soon as people start living in groups, they have to adopt some kind of an economic system. They have to set up some kind of a social contract which will:

(a) Force or persuade people to work so that the group can have the goods and services it needs.
(b) Determine what goods and services will be produced.
(c) Decide who shall produce what goods and what services.
(d) Determine how the goods and services produced by the group will be distributed among its members.—From STET, published by the Champion Paper & Fibre Company.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1947		Corresponding Weeks—1946	
November 29	107.4	November 30	103.0
December 6	112.1	December 7	106.6
December 13	110.1	December 14	106.7
December 20 (revised)	110.6	December 21	101.8
December 27 (revised)	74.9	December 28	71.8
January 3, '48	*101.1*	January 4, '47	96.3

COMPARATIVE MONTHLY SUMMARIES

1946				1947			
Jan.	94.7	July	94.0	Jan.	102.1	July	93.5
Feb.	98.4	Aug.	104.7	Feb.	105.9	Aug.	104.2
Mar.	104.4	Sep.	101.3	Mar.	106.1	Sep.	102.0
Apr.	102.7	Oct.	106.4	Apr.	105.1	Oct.	109.5
May	100.7	Nov.	105.5	May	106.2	Nov.	109.3
June	104.6	Dec.	97.0	June	106.0	Dec.	*101.8*
		Year Avg.	101.1				

COMPARATIVE YEARLY SUMMARIES

	1940	1941	1942	1943	1944	1945	1946	1947
Year to Date	85.6	97.4	90.4	87.8	88.1	89.7	101.4	*104.3*
Year Average	85.6	97.4	90.4	87.8	88.1	89.4	101.1	

PAPERBOARD OPERATING RATIOS†

Current Weeks—1947		Corresponding Weeks—1946	
November 29	93	November 30	94
December 6	98	December 7	99
December 13	100	December 14	102
December 20	100	December 21	102
December 27	77	December 28	66
January 3, '48	*78*	January 4, '47	85

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1946	90	91	100	99	94	97	89	99	96	100	99	92	96
1947	99	103	101	100	101	101	90	99	96	101	99	89	

* Based on tonnage reported to American Paper and Pulp Assocaition. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

EDITORIAL

Marshall Plan

To an industry which, along with all the rest of the Nation is about to venture into the field of world economics, future developments of world trade and world welfare present some highly specialized aspects. The Midwest this week reports some concern over the possibility that increased shipments of goods abroad under Government encouragement and for funds in dollars provided by United States taxpayers may result eventually in a tighter market for used cartons and similar material that is bought in large quantities by many important branches of the industry.

Another view is that of the prominent figure in paper exporting circles who looked gloomily at the prospect for his branch of the business unless some way be found to provide his customers with credits in this country against which they might draw for their purchases. He was not thinking of his own business, he declared. He could always find some activity to keep himself busy. But it would no good at all for the future if some way be not found pretty soon to keep normal contacts alive, if only on a token basis. How can they buy, he asked, when they haven't any dollars?

A third view is that which was reported this week from Canada which sees the likelihood that customers on this side of the border may be able to reduce the shortage of newsprint which some have figured will prevail. South Africa, according to this view, is probably the only one of the half-dozen biggest overseas newsprint customers of Canadian producers which is not likely to find it necessary to tamper with newsprint imports because of United States dollar shortage. Unless the Marshall plan supplies the other countries with more dollars, they are likely to have to follow the lead of Australia and the United Kingdom in reducing newsprint imports from Canada and Newfoundland. A twenty per cent reduction in this department would mean that more than 100,000 tons additional of Canadian newsprint would be available for the United States market. If this amount is deducted from the 250,000 tons of supply below demand estimated by the Newsprint Association, the shortage might not be more than 150,000 tons during 1948.

Canada's six best overseas customers during 1947, all but one, are having dollar trouble. Australian imports of newsprint from Canada will be cut from approximately 150,000 tons to 122,500 tons, a 13 per cent reduction. The United Kingdom, after cutting its 1947 newsprint contracts from 150,000 tons to 100,000 tons, is permitting British newspapers to import 50,000 tons in the first half of 1948, but there is no assurance that the quota for the second half of the year will be as high as for the first half. South American countries bought about 95,000 tons in 1947, but Argentina, biggest customer on that continent, has introduced import regulations which can cut newsprint imports at virtually a moment's notice. Brazil is reported to have its own newsprint mill in production, designed to produce more than 300,000 tons a year.

Used Felts

A reminder that extreme hardship of the most uncomfortable personal character still exists in countries that we are accustomed to think of as they once existed is afforded by a letter which asked for information the other day. Over the past year or two, plenty of people have asked where they could lay their hands on a few thousand tons of newsprint in a hurry. On one occasion a young man from abroad came in to ask where he might dispose of some paper that had been consigned to his country but could be made available on this side of the ocean. The present inquiry is for used felts.

The source is a woman of Finnish birth, now a resident of this country, who has just returned from a visit to her homeland. She speaks of living conditions in a country that never has sought help that are little above the cave man level so far as comforts go. She speaks as a member of an organization known as Help Finland. Her thought—and it is based on an early winter visit—is that felts which have outlived their useful lives in the paper mill are still capable of providing warmth for those lucky enough to have access to them. She is willing to submit her own credentials, and those of the organization. But she doesn't know to whom they should be addressed.

Forecasts Conditioned

Notable among the developments of industrial public relations techniques is the introduction of an element of conservation into prognostications of the course that future events will take. An examination of those forecasts which have been made as the current year got under way reveals a striking amount of personal viewpoint and a strong accent that originates in the experience and point of view of the forecaster. Existence of a strong and persistent demand is demonstrated in practically all except those which come under special influences. Probability of substantially increased business is set for on the basis of increased production facilities now installed or soon to be ready. Yet few foresee an immediate end to the period of buying pressure; there has been too much experience lately with equipment delays, transportation shortages, low water levels.

W. L. Cook
Editor

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Use of the Venturi-Scrubber on Sulphate Recovery Furnace Stack Gases*

By T. T. Collins, Jr.,[1] C. R. Seaborne,[2] and A. W. Anthony, Jr.[3]

Abstract

The development of the Venturi-Scrubber for sulphate furnace fume recovery and the installation and operation of the full-scale unit at the Thilmany Pulp & Paper Company is described.

The advantages of recovery of the chemicals and utilization of a portion of the heat generally lost in the stack gases from the soda or sulphate recovery furnace become more apparent with increasing prices of coal, salt cake, soda ash, or suitable substitutes, and also with the continued short supply of these makeup chemicals. Not only is it desirable from a public relations standpoint to reduce the dust and odor nuisance from the stack gases to a minimum, but for technical reasons, in the kraft mill, it is important to make every effort to prevent the excessive loss of sulphur, relative to sodium, in the waste gases.

In the past, heat recovery from these gases has been carried out in most mills by the use of various types of disk evaporators, scrubbers, cascade towers, etc., operating to concentrate waste liquors from the pulping process by utilizing a portion of the sensible heat in the stack gases. These units, in addition, also remove some of the dust in the gases and make it possible for some of the sulphur dioxide to be absorbed in the black liquor. They may also serve to effect the release of a considerable amount of hydrogen sulphide from the black liquor.

More recently, three systems have been devised for recovering some of the latent heat of vaporization of the moisture in the recovery furnace stack gases. Two of these systems, the INKA and the Ramén processes, use the low level heat from saturated stack gases for the evaporation of black liquor, whereas a more recent one worked out by Tomlinson and his associates produces hot water for washing pulp, etc. However, the apparent lack of interest in the problem of stack heat recovery indicates that either the mills do not realize the potentialities for savings or do not need hot water for process use.

On the other hand, increased interest in fume recovery has been demonstrated by the number of electrostatic precipitators recently installed or ordered for pulp mills, and it now appears that, within a short time, most mills will be equipped for fume recovery. The first Cottrell installation made in a kraft mill about 1916 is still in operation, but the low price and availability of salt cake until recent years apparently prevented most mill managements from thinking the use of the relatively expensive electrostatic precipitators was economically justifiable. Until recently, the Cottrell was the only equipment to be operated successfully on recovery furnace fume and to its credit can be mentioned the low power requirements and high efficiency (85 to 98%) of dust removal when the unit is not overloaded. Regrettably enough, there have not been sufficient data published on installation costs and operating costs for labor and maintenance for Cottrells in sulphate pulp mills to allow a true perspective of the economics of the equipment to be obtained.

Investigations of the application of other methods of dust recovery to recovery furnace gases are now being carried out at several places. The news is out that a full scale dust collection system utilizing ultrasonic waves is being constructed in a soda mill. In alkaline pulp mills, full-scale systems of different types of scrubbers have been built recently.

A series of "deluge" towers are said to be installed in the Cornwall mill of Howard Smith Paper Mills, Ltd. These are cyclone spray towers in series in which the gases are washed with large quantities of liquor from spray nozzles operating at low pressure. In the new Marathon mill in Ontario is an installation of the "condensation" system of fume recovery. The stack gases pass into a grid-packed tower countercurrent to recirculated fume solution and a considerable portion of the moisture is condensed carrying down with it some chemicals. The solution of fume is concentrated and cooled in a flash tank and is reused in the condensation tower. A continued bleed-off of the liquor maintains the proper concentration. Very little information has been made available concern-

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FIG. 1
General View of Venturi Scrubber

ing these two installations and only pilot plant data can be found in the literature.

More recently, there has been a pilot plant development and full-scale installation of a type of scrubber based on an entirely new theory and conception of the mechanism of scrubbing.

This unit has been called the Venturi-Scrubber and has been described *(1)*. The pilot plant data for this equipment are being published *(2)* in one of the paper journals at this time.

The Venturi-Scrubber

Early in 1946, a pilot plant Pease-Anthony cyclone spray tower was erected by the Thilmany Pulp and Paper Company to study the possibilities of fume recovery by scrubbing. The results indicated that, in a large cyclone scrubber with a sufficient quantity of liquor being sprayed at high pressure, it would be possible to recover approximately 80 to 90% of the fume in the gases. However, later investigations with other equipment showed that cyclonic spray towers do not offer the simplest solution to the fume recovery problem.

During the pilot plant work at Thilmany on the Pease-Anthony scrubber, Dr. H. F. Johnstone, of the University of Illinois, advanced a theory, the "Diffusion Theory," based on calculations which showed that fume particles of 0.1 micron diameter or less have sufficient Brownian movement to be considered as acting like large gas molecules. He suggested that filling a gas stream with small scrubbing liquor droplets and allowing sufficient time of contact between the gas and the droplets would allow collisions to take place between solid particles of 0.1 micron diameter or less and the liquid droplets. He also suggested that diffusion might play an important part in the collection of larger dust particles when the gases are made to pass a liquid surface at extremely high velocities as in an atomizer. The mass transfer phenomenon was considered analogous to gas absorption by water droplets.

In order to test this theory, and provide the liquid droplets in the gas stream, a venturi-atomizer was used ahead of the Pease-Anthony scrubber. The atomizer consists of a venturi throat through which the stack gases are drawn at high velocity while liquor is injected into the gas stream at right angles from nozzles properly arranged to give good coverage of the

TABLE I.—GAS FLOW DATA

Run	Gas Leaving Cyclone and Entering Fan			Gas Entering the Venturi Atomizer					
	C.f.m. at duct cond.	C.f.m. at STP	Temp., °F.	C.f.m. at duct cond.	C.f.m. at STP	Temp., °F.	Throat Velocity, f.p.s.	Gas Weight, lb./sec.	Approx. Pulp Production, tons/day
3	42,100	30,800	163	44,500	28,600	292	217	34	...
4	41,100	30,000	164	44,150	28,150	297	216	34	...
5	40,900	30,600	159	44,800	29,000	285	219	35	100
6	41,100	30,400	161	43,350	28,000	288	211	33	...
7	47,600	34,950	161	51,100	32,900	288	250	39	...
8	43,500	32,400	161	48,100	30,500	300	235	36	...
9	50,500	37,600	163	52,800	33,800	294	259	40	175
10	49,100	36,300	163	50,800	32,600	291	248	39	175
11	45,100	33,100	166	47,750	30,250	300	233	36	175

Exit gases have a sp. gr. of 0.87 relative to dry air and are practically saturated. Inlet gases have a sp. gr. of 0.89 relative to dry air and a wet bulb temperature of 160-162° F. STP are 32° F. and 29.92 inch Hg.

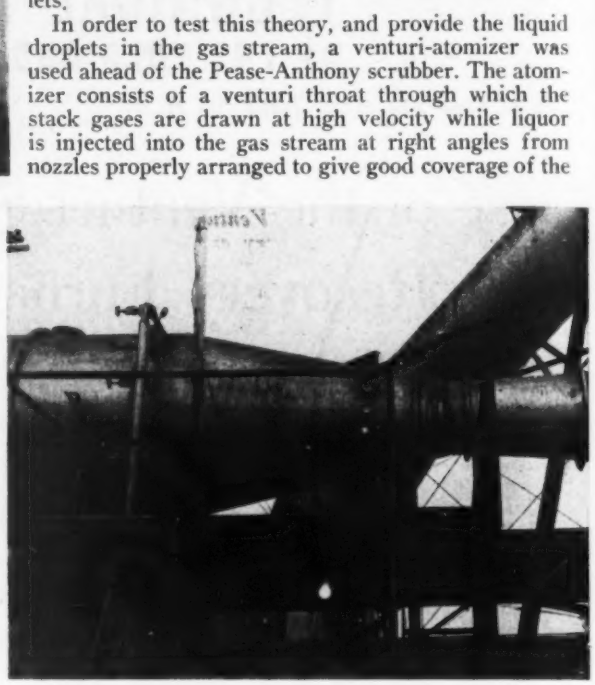

FIG. 2
Throat of Venturi Atomizer

throat. The energy of the gas moving at a high velocity atomizes the scrubbing liquor into very small droplets and fills the throat with spray. Not only did this apparatus raise the sodium removal efficiency of the pilot plant combination with the scrubber to as high as 99%, but the venturi-atomizer followed by a dry cyclone proved to give an unexpected recovery of fume with efficiencies under optimum conditions of 85 to 94%. This combination of venture-atomizer followed by a cyclone to remove the atomized liquid was then named the Venturi-Scrubber.

After the pilot plant data for the Venturi-Scrubber had been considered, construction was begun at Thilmany on a full-scale unit which began operating during July on the stack gases leaving the disk evaporators and induced draft fan after a Babcock and Wilcox sulphate recovery furnace rated for 120 tons of pulp daily production.

Figures 1, 2, and 3 show views of various parts of the Venturi-Scrubber. The stack gases pass through the venturi atomizer where the liquor is injected through nineteen nozzles similar to that shown in Fig. 4. In addition, six nozzles containing only two holes are spaced around the wall of the throat to cover areas not covered by the other nozzles. The nozzles are ¾-inch pipes, flattened on one end, and with 7/32 to 5/16 inch diameter holes equally spaced radially about 3 inches from the tip. The gas and atomized water enter the cyclone where the entrainment is thrown out. The gases leave the top of the cyclone and enter the induced draft fan which forces them

into the base of the stack. The fan is an old Sintering Machinery Corporation unit driven by a synchronous, 350 hp. motor. Several fan companies have estimated the efficiency of this fan at 55 to 60% compared to the approximately 70% efficiency that would be attained if a modern fan were used. The liquor drains out the bottom of the cyclone into a sump tank from which it is pumped back to the throat of the venturi atomizer through basket filters with ⅛ inch screen perforations. A continual bleed-off of liquor from this liquor pump and an input of makeup water by a float-controlled valve maintain the desired concentration of scrubbing liquid.

Figure 5 shows the approximate distribution of liquor in the throat of the venturi atomizer and from this an idea of the degree of atomization obtained can be had. The gases passing at high velocity through this zone of turbulence and mixing with the liquor undergo scrubbing at this point.

Before the Venturi-Scrubber was connected to the main stack duct, several test runs were made with the unit operating on air and water. Although these data are of value from the design standpoint, it is not of general interest because there are no corresponding scrubbing efficiency data. After the trials on air, the construction of the system was completed, and the equipment started operation on stack gases.

During the testing period, two methods of checking the efficiencies of the scrubber were used. For the first few runs the amount of sodium picked up by the scrubbing liquor was measured by storing the liquor produced over a time period and analyzing it. A gas analysis gave the sodium leaving in the exit gas and from these two values the efficiency was calculated. It was later found simpler and quicker to sample the gas ahead of the Venturi-Atomizer to get the inlet dust loading and, as this procedure gave results which checked those o fthe liquor pick-up method, it was decided to use it altogether. The gas sampling procedures have been described in an earlier paper *(2)*. The test runs were made while using a 30 to 32° Bé solution of fume as the scrubbing liquor. The reason for this was that it was desired to operate with the liquor recirculated at high concentration with a continual bleed-off to storage, a neutralizing tank, or the disk evaporators. For continuous feed of the liquor back into the recovery system, the continual bleed-off of liquor at high concentration was made necessary because of lack of storage facilities from which the liquor could be metered.

The data taken during the test runs of the scrubber are given in Tables I through IV and a summary is given in Table V.

Since the data represent only a few spot checks made to determine the general operating efficiency of the scrubber as originally designed, it is of interest to compare these with the original pilot data and to mention some of the operating details of this unit.

Most important of all, a reasonable minimum range of efficiency of sodium removal from the furnace gases for the full-scale Venturi-Scrubber at Thilmany appears to be 85 to 90%. It is believed that the actual "dust removal" efficiency is somewhat higher than this as the scrubbing liquor picks up a major portion of the carbon and fly ash in the stack gases. Certain improvements which are anticipated in the design of and liquor distribution in the throat are expected to improve the scrubbing efficiency at any given gas velocity through the throat and for the same ratio of liquor injection to gas flow. The velocities of gas through the venturi throat as designed were somewhat lower than had been expected from previous measurements of stack gases leaving the recovery furnace. The original pilot plant data indicated that gas velocities of 250 feet per second and upward for rates of 4 to 5 gallons of liquor per 1000 cubic feet of gas would give sodium removal efficiencies above 90% if the liquor were properly distributed. During these test runs the gas velocities in the throats were in the range of 210 to 260 feet per second. The installation of a smaller diameter throat than the one now in use is indicated on the basis of these data.

The first throat tested (runs 3 and 4) had a length of 24 inches as it has been predicted from data on small venturi atomizers that the pressure drop across the atomizer does not increase until the length of the throat exceeds its diameter. It was anticipated that the long throat might give a higher scrubbing efficiency due to better mixing of the gas and liquid in the high velocity region of the atomizer. Because of the un-

TALE II.—SCRUBBING LIQUOR DATA

Run	Condition of Scrubbing Liquor	Scrubbing Liquor Flow, g.p.m.	Scrubbing Liquor Flow, lb./sec.	Spray Manifold Pressure, p.s.i.	Gallons of Liquor per 1000 cu. ft. Gas Entering Venturi Atomizer	Number of Nozzle Holes	Diameter of Holes, in.	Jet Velocity, f.p.s.
3		324	58	5 to 7	7.3	126	5/16	11.0
4		258	46	5	5.9	126	5/16	8.5
5	pH 5.8	248	44	3 to 4	5.5	126	5/16	8.0
6	Alkaline	324	57	5 to 6	7.5	126	5/16	10.5
7	Alkaline	257	45	4	5.0	126	5/16	8.2
8	Alkaline	168	30	0	3.5	126	5/16	5.0
9	Alkaline	140	25	2.5	2.6	126	7/32	9.2
10	Alkaline	195	35	5.5	3.8	126	7/32	13.0
11	Alkaline	251	44	10	5.2	126	7/32	17.0

Scrubbing liquor density is held at 30 to 32° Bé and temperature at 155 to 160° F.

FIG. 3
Induced Draft Fan of Venturi Scrubber

expected high pressure drop across this particular design of atomizer, it was suggested that shortening the throat to the point of minimum vacuum along the length of the throat might reduce this pressure drop. By placing pipe connections through the wall of the throat at 3-inch intervals starting from the leading edge of the throat, some interesting data were obtained. At the leading edge of the throat where the spray nozzles terminated and 3 inches downstream from where the liquor was injected, the vacuum during this test was 29 inches of water. At a point 6 inches downstream from the point of liquor injection, this vacuum had dropped to 25 inches of water and then began to increase again until at 24 inches down the throat it had increased to 28 inches of water. When the throat was operated without any liquor being injected, there was the high vacuum at the leading edge of the throat of 18 inches of water, but from 3 inches downstream to the end of the throat the vacuum was between 14 and 15 inches of water. In view of this discovery, it was decided to shorten the throat to 6 inches. As a result of this change, however, there is no noticeable decrease in total pressure drop across the Venturi Atomizer and apparently no decrease in the efficiency of scrubbing.

Probably the least expected development, in view of the pilot plant data, was the unexpectedly high pressure drop across the venturi-atomizer. It appears that the particular design of throat used has an inherently high pressure drop even when clean and that some features of the design result in a buildup of dry scrubbing liquor at the wet-dry line at the entrance to the throat which also constricts the throat and raises the pressure drop. On the basis of the pilot plant data, it had been predicted that the pressure drop across the venturi atomizer for gas velocities between 200 and 300 feet per second and for liquor rates of between 3 and 6 gallons per 1000 cubic feet would amount to 13 to 16 inches of water for 90% efficiency of sodium removal. However, in these tests, the overall pressure drops across the venturi atomizer are in the range of 16 to 19 inches of water depending to a large extent on how clean the operator is able to keep the throat by occasional lancing with a high pressure water stream. The causes of the high pressure drop are thought to be the nozzle-supporting grid upstream from the throat only a short distance and the six nozzles around the throat

TABLE III.—GAS PRESSURE DROP DATA

Run	Pressure Drops: Across Venturi Atomizer, in. w.g.	Across Cyclone, in. w.g.	Across Fan Damper in w.g.	Venturi Differential,[a] in. w.g.	Venturi Drop / Venturi Diff. × 100, %	Pressure Differential Between Inlet and Outlet of Fan, in. w.g.	Fan Motor Load, kw.
3	18.6	1.9	0.8	23.8	78	21.5	210
4	20.9[b]	2.0	0.9	24.5	85	21.6	220
5	15.8	1.0	6.0	19.9	80	22.4	225
6	19.4	1.0	1.8	22.2	87	21.1	215
7	18.0	1.5	0.9	25.3	71	21.4	220
8	13.9	1.1	6.6	20.8	67	21.5	215
9	12.7	2.0	7.5	20.2	63	22.2	230
10	16.1	1.6	4.5	21.6	75	21.9	230
11	18.7	1.2	2.4	24.0	78	21.8	225
11A	16.3	1.3	..	21.5	76	...	...
12	5.3	3.0	..	19.4	27	...	...
12A	3.5	3.6	..	15.0	23	...	...

[a] For runs 3 and 4, the venturi differential was taken between upstream point and center of 24-inch long throat. For the other runs the throat connection was in the center of a 6-inch long throat.

[b] After lancing throat, this value dropped to 16.8-inch w.g.

Number 11A data was taken immediately after lancing the throat at the end of Run No. 11. During Nos. 12 and 12A no liquor was injected in the venturi throat. Data for No. 12A was taken after lancing throat at end of 30 minute running of No. 12.

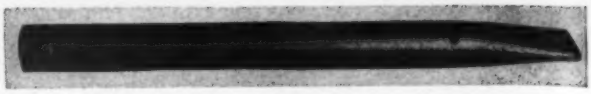

FIG. 4
Nozzle Used in Venturi Atomizer

against the wall. These nozzles against the wall create a particularly bad condition as there is a considerable build-up of dry liquor and dust between them and the wall. The other nozzles also have some build-up of salt cake just upstream of the jets. It is felt that certain changes in aerodynamic design will reduce this pressure drop as also will better distribution of a smaller quantity of scrubbing liquor for equal scrubbing efficiency.

Up until this time, it has been found advantageous to operate the scrubbing liquor system with a continual bleed-off of 30 to 32° Bé solution of fume which amounts to approximately 3 to 5 gallons per minute of a 30 to 33% salt cake (calculated from its sodium content) solution. The liquor makeup to compensate for bleed-off and evaporation is water. The scrubber liquor is fed to the black liquor enter-

TABLE IV—DUST LOADING OF GASES AND SCRUBBING EFFICIENCY

Run	Sodium in Dust Sample Calculated to Na_2SO_4: Salt Cake Entering Scrubber, lb./day	Inlet Gas Dust Loadings, grains/cu. ft.: At Inlet Cond.	Dry Gas at STP	Wet Gas at STP	Salt Cake Leaving Scrubber, lb./day	Exit Gas Dust Loadings, grains/cu. ft.: At Exit Cond.	Dry Gas at STP	Wet Gas at STP	Scrubbing Efficiency, %
3	16,500	..	..	..	1980	...	...	0.37	88
4	17,100	..	...	..	2400	...	...	0.44	86
5	18,800	2.0	4.6	3.2	2740	0.33	0.65	0.44	85
6	17,300	1.9	4.7	3.0	2230	0.26	0.55	0.36	87
7	24,400	2.3	5.6	3.6	2320	0.24	0.50	0.32	90
8	18,250	1.8	4.3	2.9	2920	0.33	0.68	0.44	84
9	22,700	2.1	4.9	3.3	4240	0.41	0.86	0.55	81
10	22,800	2.2	5.2	3.4	2700	0.27	0.56	0.36	88
11	20,620	2.1	5.0	3.3	2150	0.23	0.51	0.32	90

Efficiencies for runs 3 and 4 were based on actual liquor pickup of sodium salts and exit gas dust loadings. Other runs are based on inlet and exit gas dust loadings.

ing the disk evaporators. Originally the intention was to use the scrubber liquor (because of its high alkali content) to neutralize a niter cake solution to make liquid salt cake, but there was so much sulphur dioxide given off that that procedure had to be abandoned.

During the test runs, and subsequently, some general observations have been made which deserve further consideration and investigation. During periods when the recovery furnace, rated for 120 tons pulp daily, is operated at reduced capacity (for example, at 100 tons of pulp) the scrubber liquor becomes slightly acid with a pH of 5.8 and the sodium salts are mostly the sulphite and sulphate. During normal furnace operation at 140 or more tons of pulp, however, over half of the sodium is in the form of carbonate and bicarbonate and the liquor is alkaline at a pH of 8 to 9. Undoubtedly, the sulphur dioxide and hydrogen sulphide content of the stack gases are different depending on whether or not the furnace is being pushed beyond its design capacity. This change in alkalinity of the scrubbing liquor may be of considerable importance from the corrosion standpoint as the Thilmany unit is built for the most part of ordinary unprotected steel. If the acid conditions

TABLE V.—SUMMARY OF DATA

Run	Velocity of Entering Gas in Throat, f.p.s.	Gallons of Liquor per 1000 cu. ft. Gas Entering Venturi Atomizer	Liquid Jet Velocity, f.p.s.	Pressure Drop Across Atomizer, in. w.g.	Scrubbing Efficiency, %
3	217	7.3	11.0 [x]	18.6	88
4	216	5.9	8.5 [x]	20.9 [a]	86
5	219	5.5	8.0 [x]	15.8	85
6	211	7.5	10.5 [x]	19.4	87
7	250	5.0	8.2 [x]	18.0	90
8	235	3.5	5.0 [x]	13.9	84
9	259	2.6	9.2 [y]	12.7	81
10	248	3.8	13.0 [y]	16.1	88
11	233	5.2	17.0 [y]	18.7 [b]	90

[a] After lancing—16.8 inches w.g.
[b] After lancing—16.3 inches w.g.
[x] Nozzle holes 5/16 inch diameter.
[y] Nozzle holes 7/32 inch diameter.

were to prevail continuously, the possibility of corrosion might be serious but, because the system is alkaline almost all of the time, no rapid disintegration is anticipated unless it be due to the sulphur gases.

Because of the fact that the draft fan on the scrubber operates at a constant speed, the total power load for the scrubber for either 100 tons or 175 tons of pulp is approximately 250 kw. However, for an average daily production of 150 tons of pulp, the power requirements calculate out to 40 kilowatt hours per ton of pulp. This is slightly lower than was predicted from the original pilot plant data. It is anticipated that refinements in the design of the venturi atomizer which should result in a lowering of the pressure drop together with use of a modern fan with a variable speed driving engine should reduce this power requirement still further. Certainly there is no reason to feel that this first, more or less experimental, large-scale unit is the ultimate in design, highest in dust removal efficiency, or minimum in power requirements.

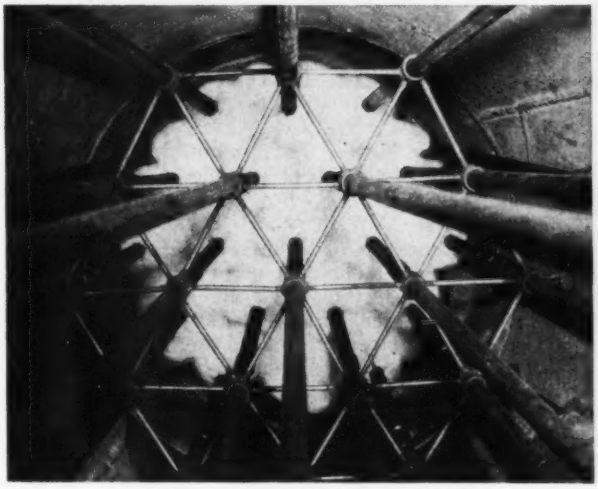

FIG. 5
Interior View of Venturi Atomizer Throat

It is difficult, within such a short time, to comment on the broad, over-all, economic aspects of the Venturi-Scrubber when compared with Cottrells as applied to the stack gases from kraft recovery furnaces. Probably the most logical application for the Venturi-Scrubber would be the combination of two functions now performed by separate and quite different pieces of equipment, the disk, cyclone, or cascade evaporators and the electrostatic precipitator, so that in one pass of the gas the solids content of the black liquor would be increased while simultaneously high percentages of the fume would be collected, with absorption of some of the sulphur gases. Should present pilot plant tests now in progress prove the feasibility of such an installation, it is believed that the Venturi-Scrubber will find wider application as an integral part of the kraft recovery furnace than the simple system of fume recovery only as now operating at Thilmany.

Acknowledgment

The authors wish to acknowledge the help of N. Gevers, C. E. Rogers, M. G. Schmitt, A. May, and R. Gillette on this project.

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Recovery of Crude Paracymene at the Fernandina, Florida Plant of Rayonier Incorporated*

By John G. Lewis[1]

Abstract

Cyrene is formed during the sulphite cooking process and leaves the digester as a vapor in the top relief gas and also as a liquid in the side relief. It is recovered as a light yellow oil from the surface of the acid tank and amounts to 1 gallon per 10 tons of pulp produced. An analysis by fractionation is given.

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* Presented at the meeting of the Chemical Products Committee of the Technical Association of the Pulp and Paper Industry held in Asheville, N. C., Oct. 9-11, 1947.

Paracymene $C_{10}H_{14}$ or P-isopropyltoluene, is formed during the sulphite cooking of pine wood by splitting off hydrogen atoms from terpenes $C_{10}H_{16}$, or higher organic compounds associated with the resins. Paracymene may also be produced according to Ashcan and Bergstrom by passing terpenes over a suitable metal catalyst, or by heating them in the presence of a gaseous or an aqueous solution of SO_2.

Cymene is formed during the cooking process and leaves the digester as a vapor in the top relief gas, and also as a liquid in the side relief. Both types of relief are absorbed in the raw acid system, where the

cymene is found as a light yellow oil floating on top of the fortified acid in the storage tanks. The cymene emulsifies very easily at this point and the amount found on top of the acid is dependent, to a great extent, on the turbulence in the tanks.

The cymene is removed from the acid storage tanks by overflowing into a separate storage tank where it is aerated to remove gaseous SO_2 and neutralized by adding a small amount of commercial soda ash.

The amount of cymene formed is dependent upon many variables, the principal of which in this process are, species of pine used, resin content, seasonal characteristics, and the amount of aging that exists between cutting and processing. The quantity of cymene recovered at this plant will average about one gallon per ten tons of pulp produced. There are variables which affect the recovery of the cymene, such as the length of time and the rate of top and side relief, the turbulence in the acid tanks, and the unknown quantity which leaves the digester with the pulp which is lost in the washing process.

The crude paracymene formed from southern pine wood will analyze about 80% pure paracymene, with the remainder being low boiling materials, consisting in part of terpenes, and a dark, extremely viscous residue left after the fractionation is complete.

An analysis by fractionation is given in the Table I.

TABLE I.—ANALYSIS OF CYMENE BY FRACTIONATION

A 500 ml. sample of crude cymene (S.G. 0.875-30/15.5, 0.878-25/15.5) was obtained on September 22, 1946, and fractionated in a 1-inch by 30-inch Stedman at 100 mm., using a reflux ratio of approximately 5:1.

Fraction No.	Boiling Range, °C.	Pot Temperature, °C.	Volume	Volume, % Distilled	25 n D
1	89–103	120–125	20	4	1.4720
2	108	128	15	7	1.4815
3	108	124	15	10	1.4855
4	108	126	50	20	1.4870
5	108.5	124	50	30	1.4880
6	108.5	125	50	40	1.4882
7	108.5	127	50	50	1.4882
8	108.5	128	50	60	1.4884
9	108.5	140	50	70	1.4885
10	108.5	160	50	80	1.4886
11	107	230	25	85	1.4887
12	105.5	255	10	87	1.4880
13	Residue (69g—dark amber and very viscous.)				

Fractions 1 and 2 contained a few drops of water.
Fractions 4-7 were combined: S.G. 0.8538-24/15.5.
Fractions 8-11 were combined: S.G. 0.8555-23/15.5.
Fractions 4-11 were combined: S.G. 0.8583-20/15.5, 0.8545-25/15.5, $n^{T}D$ 1.4900[20], 1.4883[25].

Ohio Section of TAPPI Meets in Middletown

The Ohio Section of the Technical Association of the Pulp and Paper Industry was honored by the presence of the National President of TAPPI, W. F. Gillespie, at its last meeting on January 8, 1948. The meeting, held at the Manchester Hotel in Middletown, Ohio, was outstanding in another respect and that was that a record breaking number of members and guests were present. One-hundred and four men attended the dinner and meeting, had the pleasure of meeting and renewing acquaintanceships with Mr. Gillespie and to hear a very constructive paper and discussion.

Mr. Gillespie gave a short address in which he conveyed a gracious greeting from the Executive Committee of TAPPI and expressed his pleasure over the activities and spirit of the Ohio Section. He then continued with a resume of some of the problems of general interest facing National TAPPI and with a number of announcements of future activities and events to come.

The topic for discussion at this meeting was, "Costs as a Tool of the Technical Man." A very constructive paper on the subject was presented by Homer H. Latimer, Director of Paper Making of the Champion Paper and Fibre Co. In introducing his subject, Mr. Latimer stated that all industrial relations must have their foundation upon the tenets of Christianity. Costs, he stated, are a record of something which has happened and one of their very valuable uses is as a guide to all members of an organization to determine if they are accomplishing something. Cost figures made available to employees act in a way as a score board to show them what they are doing towards increasing or decreasing costs and act as an incentive towards reducing costs.

The interest which the paper aroused was demonstrated by the large number of questions asked and by the lively discussion following the presentation of the paper.

Among those present were the following: Don Goodman, Harold Koch, K. P. Geohegan, Edgar Turnbull, Art Thurn, D. M. Yost, W. F. Gillespie, H. H. Latimer, Edward Lum, Jerry Rand, B. M. Baxter, James T. Rice, Leo Geiser, George Johnston, Ray Maggart, L. R. Black, C. H. Morgan, V. J. Wirpsa, Jerry Moyer, T. Agromin, J. Fiori, E. P. Felt, Howard Parker, Ralph Buschler, George Sharpe, Claude A. Sorg, A. S. Boyers, Claude Bishop, S. Jenkins, T. B. Mathers, W. H. Boast, C. R. Merriman, C. D. Roess, S. R. Holmes, C. E. Brandon, T. Q. Holden, Charlie Moore, Homer Freerer, John Jack, P. A. Williams, C. O. McNeer, John Owen, Carl Ireton, E. A. Greer, R. L. Betts, D. E. Moser, W. J. Cassidy, J. A. Hoerner, John Dow, W. L. Owens, D. W. Newell, William Trunnel, S. J. Porter, A. J. Etter, C. L. McKasson, J. S. Hunter, F. L. Zellers, W. O. Callighan, R. A. Seidenstieker, Marvin Small, G. A. Young, W. M. Barrett, Art Coffin, W. G. Magnuson, W. J. Wachter, H. A. Smith, J. W. Burk, J. R. Wiebush, E. I. Eitel, R. M. Morris, Jr., S. M. Bazler, B. P. Sunch, J. M. Fisher, J. . Schuster, E. P. Fitzgerald, A. H. Frazer, Paul Ptezold, William Biven, J. B. Barnes, J. W. Natvrick, Fred Schorken, Robert Beckett, C. L. Gebhart, Robert Wilson, J. L. Clouse, W. A. Deneke, R. D. McCarron, E. O. Knapp, S. F. Vogler, R. R. Miller, R. H. Zecher, B. Gruehs, N. R. Murphy, P. S. Cade, T. L. Yocum, Kon Matchuck, Paul C. Miller. Leon Tyler.

TAPPI Notes

Eugene H. Smith, who has recovered from a long illness, has returned to the Crossett Paper Mills, Crossett, Ark., where he is assistant technical director.

J. F. Teti is now President of the Specialty Converting Company, Inc., 405 Lexington Ave., New York, N. Y.

Francis O. Boylan, formerly of the Marinette Paper Company, is now assistant to the superintendent, Fernstrom Paper Mills, Pomona, Calif.

Frank H. Bopp has transferred from the Joliet, Ill., mill to the Constantine, Mich., mill of the American Can Company, where he is assistant to the plant manager.

The TAPPI Delaware Valley Section will meet on Thursday evening, January 22nd, at 6:30 p.m. Bernar K. Asdel and C. J. Albert of Edgar Bros. Company will talk on "Flow Characteristics of Clay-Water Suspensions."

Rapid Estimation of Moisture of Straw in Bales*

By S. I. Aronovsky[1] and H. M. Sutcliffe[2]

Abstract

A description is given of the method of checking the Delmhorst instrument which is used to determin the amount of moisture in straw. The apparatus was found to be satisfactory up to 25% moisture content; beyond this only for indicating that the straw is slightly or extremely wet.

A rapid, practical, reliable method for determining the moisture content of baled straw is a necessary requirement for increased industrial utilization of straw and other fibrous agricultural residues. The moisture in straw has a definite bearing on its storing and processing characteristics. Too much moisture in baled straw results in rapid and extensive weathering and deterioration during storage. Strongly weathered straw generally produces inferior products at increased cost, a significant economic loss.

The importance of this problem to the industrial consumers of straw caused it to be chosen as one of the main projects of the Fibrous Agricultural Residue Committee of the Technical Association of the Pulp and Paper Industry (TAPPI). This committee, composed mainly of the top technical men and operators in the strawboard industry, investigated the possibility of applying the various known moisture methods to straw bales.

The casual estimation of moisture in baled straw by looking at the bales and feeling the straw is a method that leaves much to be desired. The standard method of suitable sampling and drying the samples to constant weight is reliable but is time-consuming and unsuitable for field work. The newer and more rapid methods of determining moisture in materials such as grain, lumber, and paper by measuring the electrical conductivity or the dielectric loss of these materials seemed to offer the best possibilities for testing baled straw and other agricultural residues.

After studying the various testing instruments available and testing some of them on baled straw, the industrial technical men chose the Delmhorst moisture detector on the basis of simplicity, ease of operation, duplicability of test results, and cooperation of the manufacturer in making desired changes in the instrument. The Delmhorst moisture detector (Fig. 1) is based on the electrical-resistance principle. The two electrodes are located at the tip of a single test prod 5 inches long and have an insulated area between them. The instrument is powered by dry cells, and the electrical circuit includes standard radio-type vacuum tubes and a broad range of resistances. Moisture values of 7 to 25% and 20 to 50% are read directly on two dials. The complete instrument is light in weight and enclosed in a portable case.

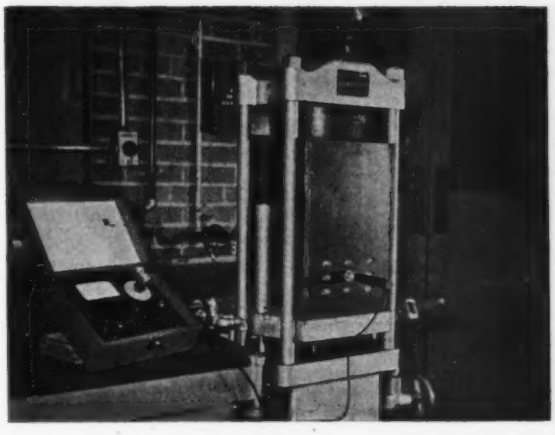

FIG. 1

Delmhorst moisture detector and laboratory baling press. Note test prod and testports in baler.

Procedure for Checking Instrument

At the request of the members of the TAPPI Fibrous Agricultural Residues Committee, the Northern Regional Research Laboratory joined in cooperative work in testing the adaptability, accuracy, and practicality of the Delmhorst instrument (Model RC) which was supplied for this purpose by the manufacturer.

Thirteen bales, which included oat, rye, rice, durum wheat, and soft red winter wheat straw, were tested. Five of these bales had been in covered storage at

TABLE I.—PHYSICAL MEASUREMENTS OF STRAW BALES

Bale Number	1	2	3	4	5	6	7	8	9	10	11	12	13
Type straw	Durum wheat	Durum wheat	Oat	Rice	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat
Dimensions													
Length, in.	45¼	41¾	46	43	42½	48¾	46¼	46¼	45¾	48¾	49½	48	48
Width, in.	18½	18¾	18½	17¾	17¾	18	19½	19	19	18½	19	18½	18½
Depth, in.	15	15	17¾	16¾	16½	15½	17	17	15¾	15	15	15	15
Weight, lb.	59	53¼	77¼	83	50¾	103	68½	72¾	64½	55¾	72¾	74¼	71¼
Density, lb./cu. ft.	8.1	7.8	8.8	11.3	7.1	13.1	7.7	8.4	8.5	7.1	8.8	9.6	9.2
Weight calculated to 16 × 18 × 42 inches bale-pounds	57	55	62	79	50	91	54	59	60	50	62	67	64
Weight[1] of 16 × 18 × 42 inches bale at 10% moisture-pounds	53	46	61	78	49	57	34	49	46	49	45	49	51

[1] Based on oven-dry weight of bale.

* Presented before the meeting of the TAPPI Fibrous Agricultural Residues Committee, at the Alton Box Board Co., Alton, Ill., October 22-24, 1947.

[1] Member TAPPI; In Charge, Pulp and Paper Section, Agricultural Residues Division, Northern Regional Research Laboratory,[3] Peoria, Ill.

[2] Chemist, Pulp and Paper Section, Agricultural Residues Division, Northern Regional Research Laboratory,[3] Peoria, Ill.

[3] One of the laboratories of the Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, U. S. Department of Agriculture.

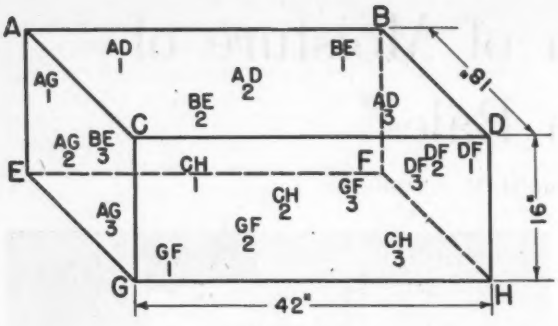

Diagram A

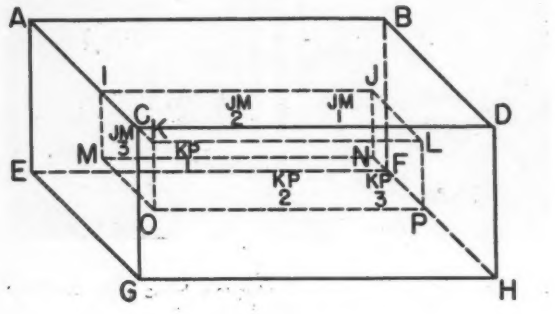

Diagram B

FIG. 2

Location of areas tested with the moisture detector. Diagram A, outer test area of bale; diagram B, inner test areas of bale.

the Laboratory for some time, while the remaining eight bales were tested directly upon receipt from the storage yard of a strawboard mill. These eight bales were wrapped in waterproof paper immediately after testing in the mill yard, then shipped to this Laboratory, arriving with the paper covering intact. The general testing procedure was to make a large number of tests on each bale with the instrument and then dry the bale to constant weight at 100 to 105°C. in an air oven. Each bale was accurately weighed and measured before testing (Table I).

In testing these bales, the prod was inserted into the bale at three points on a diagonal of each of the six sides of the bale as indicated in Fig. 2, diagram A. Since this test prod was not long enough to reach the center of the bale, a number of cores 4 inches deep were removed by a 2-inch pipe with sharpened end. Tests were then made in the center of the bale as indicated in Fig. 2, diagram B.

The test results at the various points on the bales as indicated by the Delmhorst instrument, and the total amount of moisture in the bales as determined by oven drying, are given in Tables II and III. All of the test results recorded as 50+ indicate a moisture reading above 50%, the limit of this particular instrument. In determining the average reading, these values were taken as 50%.

The data in Table II show that with the exception of the bales with relatively high moisture content, there was fair agreement between the averages of the values as read from the instrument and the actual amount of moisture in the bales as determined by oven drying. This was particularly true for bales with less than 25% moisture. There was some variation between the individual meter readings, as expected, especially with those bales received directly from the strawboard-mill yard; they appeared to have alternate wet and dry sections as detected by visual observation and by feel. The wet sections contained moldy spots and sprouted grain. In general, the meter values for the wetter bales indicated higher moisture content than were obtained by oven drying. It is difficult to explain the anomalous results obtained with bale 9. It was noted in this particular bale, however, that one end seemed to be quite damp.

Good agreement was shown between the meter values obtained at the strawboard mill when the bales were shipped and those obtained after the bales arrived at this Laboratory, with the exception of the values for bales 7 and 12 (Table III). This discrepancy was probably due to the nonuniform moisture distribution in these two bales. The shaded portions of the bales in Fig. 3 indicate the wet areas as determined from the meter readings obtained in this Laboratory and from visual observation. Since only five tests were made on each bale at the mill, it is possible that the prod could easily have missed the extremely wet areas.

TABLE II.—DETERMINATION OF MOISTURE IN STRAW BALES WITH THE DELMHORST MOISTURE DETECTOR—MODEL RC

Bale Number	1	2	3	4	5	6	7	8	9	10	11	12	13
Type straw	Durum wheat	Durum wheat	Oat	Rice	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat
Meter readings at test points													
AD-1	21.0	22.0	12.5	14.5	9.0	40	50+	21.0	12.5	10.0	46	22	21
AD-2	20.0	25.0	12.0	14.0	9.0	50+	40	20.5	14.5	11.0	15	18	50+
AD-3	18.5	23.0	13.0	14.0	9.0	50+	50	19.0	20.5	10.0	35	24	35
BE-1	18.5	22.0	13.0	13.0	9.5	50+	50	18.5	16.0	10.5	22	30	27
BE-2	18.0	24.0	12.5	14.5	9.5	50+	40	20.5	18.0	10.5	20	30	24
BE-3	18.0	21.0	13.5	13.5	9.5	50+	48	19.0	23.0	10.5	14	40	19
AG-1	21.0	24.0	14.0	15.5	10.0	40	45	19.0	20.0	10.0	25	42	23
AG-2	18.5	23.0	14.0	15.5	10.5	36	40	21.0	20.0	10.5	13	30	24
AG-3	20.0	25.0	14.0	16.0	10.5	50+	50	19.0	20.0	10.0	30	44	16
CH-1	19.0	21.0	13.0	16.0	9.5	50+	50	19.5	20.0	10.0	50+	23	40
CH-2	17.5	25.0	13.0	14.0	9.5	50+	50	19.5	13.5	10.0	50+	19	22
CH-3	18.0	24.0	12.0	12.5	8.5	50+	50+	19.5	11.0	10.5	50+	50+	15
DF-1	21.0	25.0	14.0	15.0	10.0	50+	50+	19.0	15.0	10.5	50	32	20
DF-2	19.0	25.0	14.0	14.5	10.5	50+	38	18.5	14.5	10.0	15	40	35
DF-3	18.5	25.0	14.0	14.5	10.5	50+	36	18.0	16.5	10.0	30	50+	20
GF-1	17.5	21.0	12.5	15.5	8.5	50+	28	20.0	12.0	10.0	40	28	14
GF-2	17.5	25.0	12.5	14.0	9.0	50+	29	20.5	12.0	11.0	15	40	17
GF-3	18.0	22.0	12.5	14.0	9.0	50+	48	18.0	24.0	10.5	30	50+	17
JM-1	17.5	21.0	10.5	12.5	8.5	50+	50+	19.0	12.5	10.5	30	21	19
JM-2	15.5	25.0	10.5	12.5	8.5	49	50	24.0	13.0	10.5	14	22	27
JM-3	15.5	25.0	10.5	12.0	8.5	44	44	19.0	25.0	10.5	20	38	26
KP-1	16.0	24.0	10.5	12.0	9.0	50+	50+	21.0	22.0	10.5	30	40	22
KP-2	15.5	25.0	10.5	12.0	9.0	46	40	23.0	13.0	10.5	15	22	18
KP-3	15.5	20.0	9.5	11.5	8.5	48	30	20.0	12.0	10.0	22	22	16
Average meter reading	18.1	23.4	12.4	13.9	9.3	48.0[1]	44.0[1]	19.8	16.7	10.3	28.4[1]	32.8[1]	23.6[1]
Actual moisture oven dried, per cent	15.2	17.3	11.7	11.4	10.8	38.4	37.8	17.2	23.3	10.9	26.8	25.3	21.3

[1] In determining the average reading, 50+ values were taken as 50.

TABLE III.—COMPARISON OF DELMHORST MOISTURE DETECTOR VALUES ON STRAW BALES AT STRAWBOARD MILL AND AT NORTHERN REGIONAL RESEARCH LABORATORY

Bale Number	6	7	8	9	10	11	12	13
Type straw	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat	Soft red winter wheat
Meter readings at mill	...	...	...	...	10	15	16.5	27.5
	...	...	...	...	11	24	13.5	25.5
	...	...	...	...	11	11	13.0	30.5
	...	...	...	...	11	23	11.5	27.2
	...	...	...	...	10	50+	24.2	24.0
Average of mill readings, %	above 25	25	20	15	10.6	24+	15.7	27.0
Average of laboratory readings, % [1]	48.0	44.0	19.8	16.7	10.3	28.4	32.8	23.6
Actual moisture (by oven drying), %	38.4	37.8	17.2	23.3	10.9	26.8	25.3	21.3

[1] From Table II.

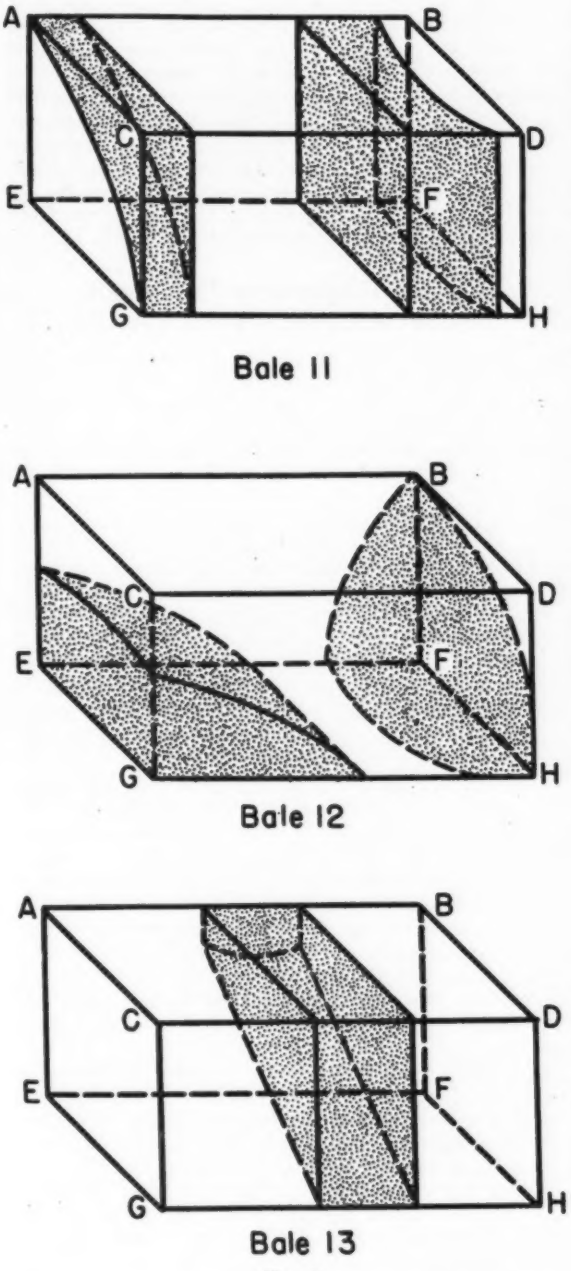

FIG. 3

Wet areas in straw bales from commercial ricks. Shaded portions indicate the wet areas with mosture content above 30% as indicated by the moisture detector and by visual observation.

It was noted that when the bales were loosened, the moisture values as measured by the instrument showed a decrease. A series of tests was made, therefore, to determine the effect of applied pressure and bale density on the instrument readings. The calculated amount of straw equivalent to 1 cubic foot of a 40-pound, 16×18×42-inch bale (10% moisture basis) was placed in a steel box of 12×12-inch cross-section and about 18 inches high (Fig. 1). The straw was covered with a ½-inch steel plate which fit fairly closely inside the box. This plate was then forced into the box until the volume occupied by the straw was 1 cubic foot. The test prod was inserted in the straw through several small holes in the sides of the box, and the moisture values were recorded. The straw was then compressed to densities equivalent to bale weights of 50, 60, 70, 80, 90, and 100 pounds. The moisture readings obtained at these points are given in Table IV and shown graphically in Fig. 4. In the single-point test, the prod was inserted through a vertical slot in the box when the volume was 1 cubic foot and it was allowed to stay in that position through out the entire range of increased pressure.

It is evident from these curves that the Delmhorst instrument shows increasing moisture values with increasing density of bale. With exceptionally dry straw, however, the increased bale density seemed to have but little effect. With increasing bale density the rate of rise in the Delmhorst values, as shown in Fig. 4, increased with the moisture actually present in the straw.

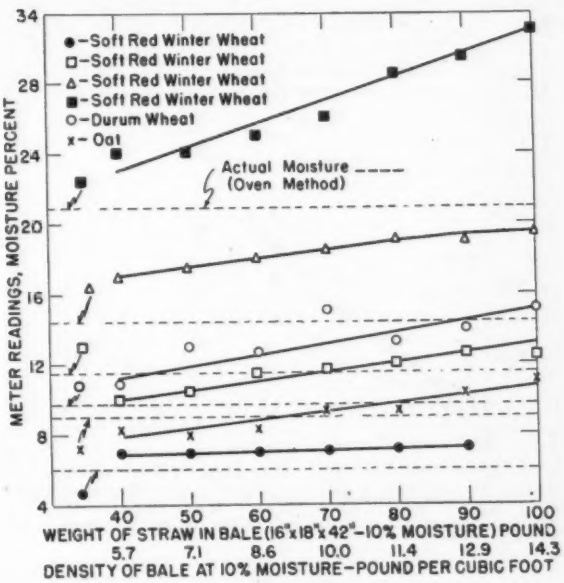

FIG. 4

Moisture detector values for straw in bales of increasing density.

TABLE IV.—DELMHORST MOISTURE DETECTOR VALUES AND BALER PRESSURE FOR BALES MADE IN LABORATORY BALER

Weight of 16 × 18 × 42-inch bale (at 10 per cent moisture)-pounds			40 pounds		50 pounds		60 pounds		70 pounds		80 pounds		90 pounds		100 pounds	
Type straw	Actual moisture Per cent	Meter readings	Pressure	M	P	M	P	M	P	M	P	M	P	M	P
Durum wheat	9.6	10.9	120	13.0	160	12.7	280	15.1	350	13.3	490	14.0	670	15.2	800
Oat	9.0	8.3	100	8.1	150	8.4	210	9.4	280	9.3	360	10.5	560	11.0	660
Soft red winter wheat	6.1	7[2]	90	7[2]	180	7.0	300	7.0	400	7.0	500	7.2	1000	...	...
Soft red winter wheat	11.5	10.0	70	10.5	190	11.5	260	11.8	360	12.1	490	12.7	700	12.5	850
Soft red winter wheat[1]	14.5	17.0	140	17.5	180	18.0	260	18.5	350	19.0	440	19.0	...	19.5	790
Soft red winter wheat[1]	20.9	24.0	130	24.0	180	25.0	250	26.0	310	28.5	380	29.5	650	31.0	750

[1] For these meter readings the test prod was thrust into the laboratory bale through a vertical slot in the side of the baler. The test prod was allowed to remain in the same position throughout the full range of compression. The other readings were obtained from an average of five tests made through small test parts in the side of the laboratory baler.
[2] The lowest value obtainable with this instrument.

The curves in Fig. 5 show that the increment of applied pressure to produce standard bales of more than 80 pounds is considerably greater than that required for bale weights up to 80 pounds. This indicates the impracticality of producing baled straw of 10% moisture content with a density greater than 11.4 pounds per cubic foot. The greater pressure required to bale dry straw is evident. The curve for oat straw shows that less pressure is required to bale this softer straw.

Attempts were made to wet the straw to various moisture contents by the use of steam or a fine water spray. The wetted straw was allowed to stay in covered containers for 2 days. At the end of the 2-day period the test results were unsatisfactory because of the nonuniform penetration of moisture into the straw. Apparently, a considerably longer period than two days is required for the moisture to penetrate the straw uniformly.

It is apparent from these data that the Delmhorst moisture detector can meet the requirements of the industry for estimating the moisture in baled straw up to a moisture content of approximately 25%. It is fairly accurate up to 15% moisture. Beyond 25% moisture the model RC used in this work is satisfactory only for indicating whether the straw in the test area is slightly wet or extremely wet. Recalibration of the dials of the instrument would probably result in better agreement between the values indicated on the instrument and the actual moisture content of the straw. The instrument is simple and compact and meets the requirements of the industry in so far as rapidity of testing and portability for field work are concerned.

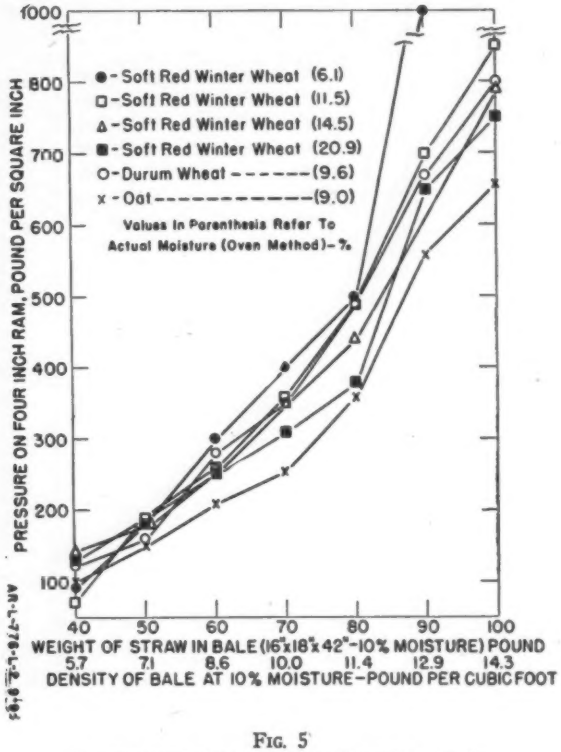
PRESSURE ON FOUR INCH RAM, POUND PER SQUARE INCH
1000
800
700
600
500
400
300
200
100
● - Soft Red Winter Wheat (6.1)
□ - Soft Red Winter Wheat (11.5)
△ - Soft Red Winter Wheat (14.5)
■ - Soft Red Winter Wheat (20.9)
○ - Durum Wheat ------- (9.6)
x - Oat ---------- (9.0)
Values In Parenthesis Refer To Actual Moisture (Oven Method) - %
40 50 60 70 80 90 100
WEIGHT OF STRAW IN BALE (16"x18"x42"-10% MOISTURE) POUND
5.7 7.1 8.6 10.0 11.4 12.9 14.3
DENSITY OF BALE AT 10% MOISTURE - POUND PER CUBIC FOOT

FIG. 5
Pressure required to form bales of increasing density in laboratory baler.

Stock Preparation Discussed by Western New York TAPPI

The regular monthly meeting of the Western New York Group, Empire State Section, Technical Association of the Pulp and Paper Industry, was held as a joint meeting with the Canadian Pulp and Paper Association, Technical Section, Niagara Branch on Dec. 10, 1947 at the Prospect House, Niagara Falls, N. Y.

A panel discussion on "Pulp Stock Preparation" was the topic of the evening. W. H. Monsson, Chairman of the Program Committee, introduced the panel, consisting of R. F. Vokes, Director of Laboratory, Dilts Machine Works, Fulton, N. Y.; C. H. Vickery, Manager of Sales, E. D. Jones Co., Pittsfield, Mass.; and D. G. Sutherland, Vice-President, Sutherland Refiner Corp., Trenton, N. J. After each member of the panel had spoken briefly on the methods and equipment used in stock preparation, the meeting was opened for discussion.

Mr. Vokes spoke on the different types of equipment used in stock preparations. He stressed the point that, because paper making fibers and papers made from the fibers have specific characteristics, specific equipment is needed for each step in stock preparation. He traced the flow of stock from its beginning as a raw suspension through to its entrance to the paper machine and described some of the functions of the different pieces of equipment used along the line of flow. Mr. Vokes showed how the flow and consistency of the stock was controlled at various points.

Mr. Vickery was next speaker and described what happens to fibers during processing. He defined the basic action of cutting and beating as the movement of one square edge against another square edge and pointed out that all types of beating and cutting machinery are constructed around this basic principle. Mr. Vickery listed the five main factors in beating and cutting machine design, operation, and performance, namely:

1. Inch cuts per minute or inch bar strokes per minute.

(Continued on page 56)

Moisture Testing of Baled Straw by Electronic Methods

By Norval F. Wilson[1]

Abstract

A brief description of the electrical circuits and application of moisture meters used for determining the moisture in straw is given.

The manufacture of paper from straw requires the handling of a large volume of raw material in the form of bales. Normally, straw contains from 10 to 14% moisture, but higher amounts up to 50% are sometimes present. The straw purchaser needs a rapid and reliable means for determining this moisture. While oven drying is recognized as the basic method, it has serious limitations. Only a few bales can be oven dried and there is no way of knowing that they are representative of the thousands of bales that are received.

The electronic moisture meter gives an indication of the amount of moisture in a matter of seconds after the test prongs are thrust into a bale. Moisture conducts a certain amount of electric current which is measured. The performance of the electronic moisture meter can be appreciated from a study of the conditions under which it must operate.

Moisture Meters

Figure 1 shows graphically the electrical resistance range in ohms observed in baled straw at moistures from 10 to 50% using conventional prong electrodes. On the logarithmic graph, there is a straight line relationship up to 28% moisture. Above 28% moisture there is a different rate of conductivity following another line of greater slope. Apparently the intersection of these lines marks a change in condition from surface moisture to one in which some drops of water are present. At 10% moisture the electrical resistance approaches 1000 megohms. That is 1 billion ohms. At the other extreme, 50% moisture provides a low resistance path of about 30,000 ohms. The electronic moisture meter covers this range in easy reading scale divisions. How successfully this is done can be seen from the reference line marked "Oven" which gives actual moisture by oven drying for comparison with results obtained by electronic methods. The agreement is excellent up to 28% and there is reasonable accuracy in the excessive moisture region. It may be pointed out that even the oven drying method is subject to more variation in results on very wet samples through evaporation during sampling and from other causes.

Figure 2 presents another phase of the problem in design of electronic moisture meters. This curve, resembling a rectilinear hyperbole, helps visualize two distinctly different conditions. Straw in the dry range up to 23% moisture, has a relatively high electrical resistance measured in megohms, or millions of ohms; and the current passing with a 45 volt potential is below 100 microamperes. Above 23% in the wet range, straw has much lower resistance measured in thousands of ohms. The current flow can exceed 500 microamperes.

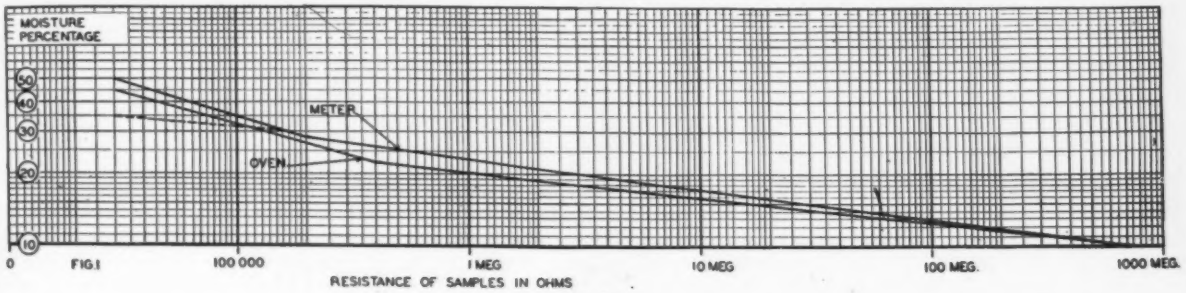

FIG. 1

Electrical resistance range in baled straw from 10 to 50%.

The first electronic moisture meter for baled straw covered a range from 7 to 25%. The need for an additional range up to 50% had to be met with a separate unit designed for operation on the low resistance side of the curve. Both models were housed

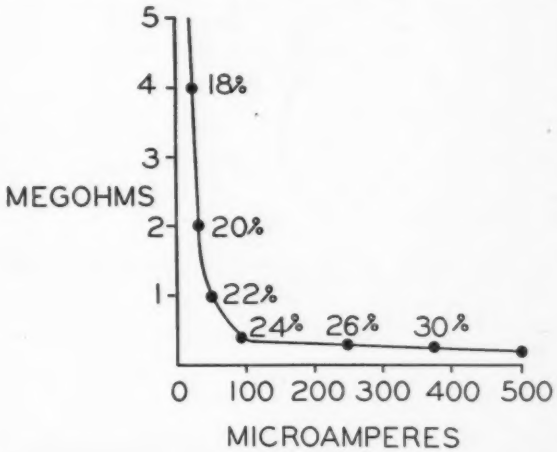

FIG. 2

[*] Presented at the meeting of the TAPPI Fibrous Agricultural Residues Committee held at the Alton Box Board Co., Alton, Ill., Oct. 23-24, 1947.

[1] Member TAPPI; Chief Chemist, Alton Box Board Co., Alton, Ill.

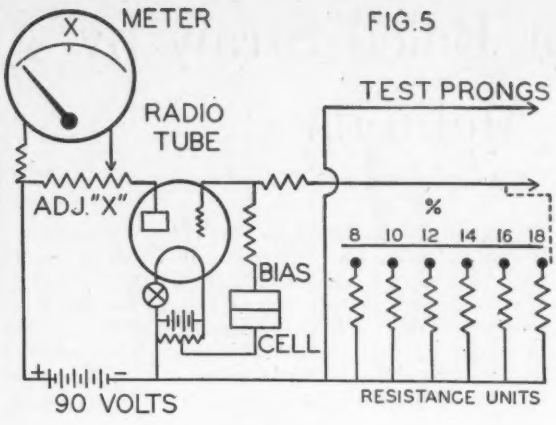

FIG. 3

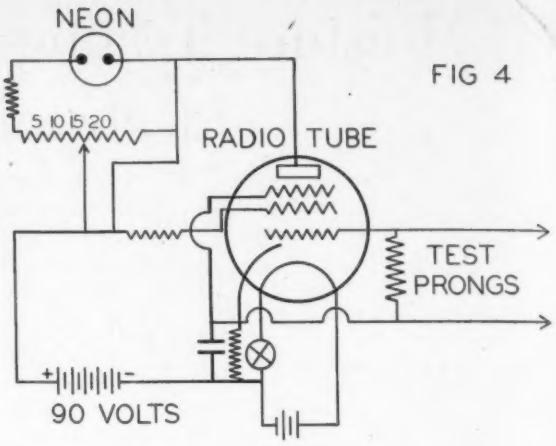

FIG. 5

in the one case. Some new models have recently been designed to cover the whole range in one compact instrument.

Figure 3 illustrates a simple circuit covering the 20 to 50% range by direct conductivity using a microammeter to show the current flow. The battery voltage is limited by adjustment of a rheostat to give full scale meter reading against a resistance standard "X." When the moisture happens to be less than 20%, not enough current is available to operate the meter. An increase in battery voltage cannot extend the range below 20% because of the abrupt shift to the high resistance side of the curve shown in Fig. 2. Hundreds of volts would be required to enter this low moisture range.

Figure 4 is a simplified circuit of the type used in the low moisture range. Th amplification factor of a radio tube gives a magnified response to the small current flowing in the control grid circuit. A neon bulb is shown in this drawing. It is characteristic of the neon tube that it has a critical voltage below which it will not light. This is used as an indication of circuit balance. A variable resistance is adjusted until the neon tube lights. Per cent moisture is read from the dial setting. Commercial instruments are much more complicated than this circuit which is used to show the principle of operation.

Figure 5 is in many respects similar to Fig. 4 except that a meter replaces the neon bulb. This meter indicates circuit balance and does not show per cent moisture on its scale. A test is made by obtaining a reading at 'X' which may be any number on the scale. Then a check is made substituting resistance standard units across the test prong circuit until one is found to give the same meter reading as the sample. The percentage moisture is read at the resistance terminal. There is some disadvantage in having to find this resistance value manually for each test; however, the calibration is permanent and dependable.

There are other types of electronic moisture meters operating on high frequency current to measure differences in conductivity, capacity, or impedance. Such meters are particularly sensitive in the range from 0 to 5% moisture, and therefore do not come within the scope of a discussion dealing with straw moisture.

New instruments designed to cover the whole moisture range from 7 to 50% in baled straw will very likely follow the principles covered in the circuits shown. It would not however be advisable to attempt construction of a moisture meter from these simplified circuits, because a satisfactory instrument requires expert engineering design. This is readily available in the highly satisfactory electronic moisture meters now on the market.

The TAPPI Fibrous Agricultural Residues Committee has performed a very helpful service to the strawboard industry in sponsoring the development of this specialized equipment. The straw purchaser is provided with a rapid and reasonably accurate means of making an adequate number of moisture tests, and the farmer who sells baled straw is pleased with the resulting fair settlements.

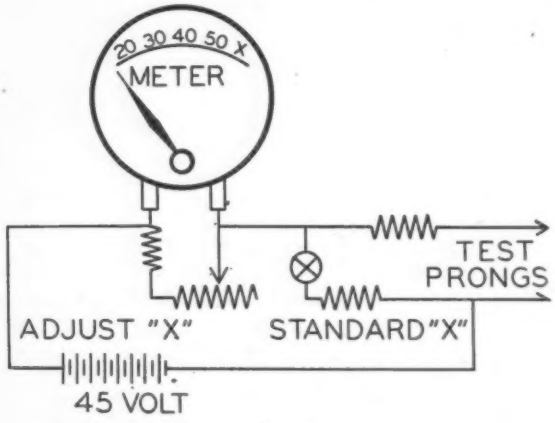

FIG. 4

TAPPI Western New York Meeting

(Continued from page 54)

2. Square inches per minute to determine accumulated area in contact.
3. Maximum pressure used per unit of area.
4. Surface speed in feet per minute of rotor.
5. Power—how it is applied and distributed.

Mr. Sutherland spoke on the single disc type of pulp refiner and the efficiencies of various design. He outlined the calculations used in the designing of installations and the operation or refining equipment. He related different experiences encountered in pulp mills.

The meeting was attended by approximately 100 technical men from local and near-by industries. A. H. Nadelman, International Paper Co., Niagara Falls, N. Y., presided.